OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

Cloning Scheme for Generating pCMV-NS35

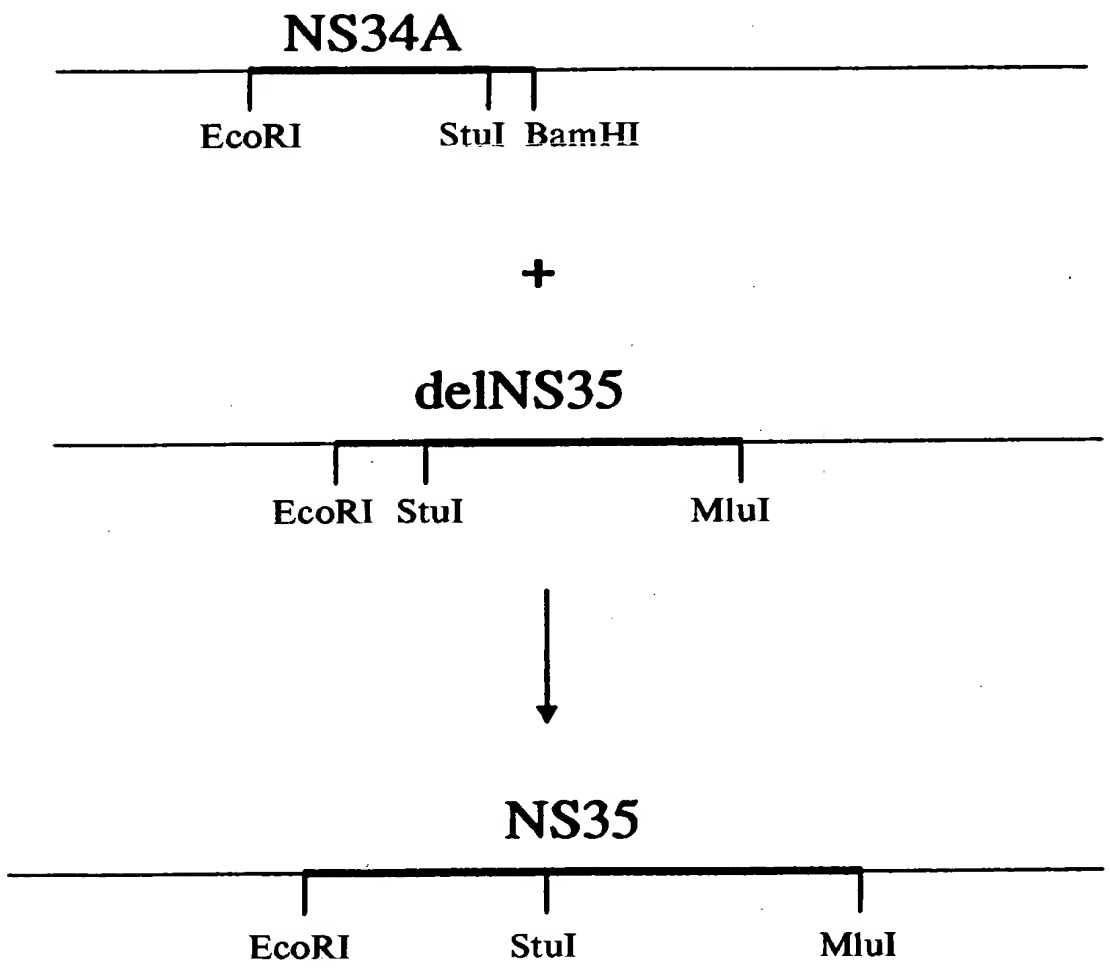

FIG. 1

09/721,479

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

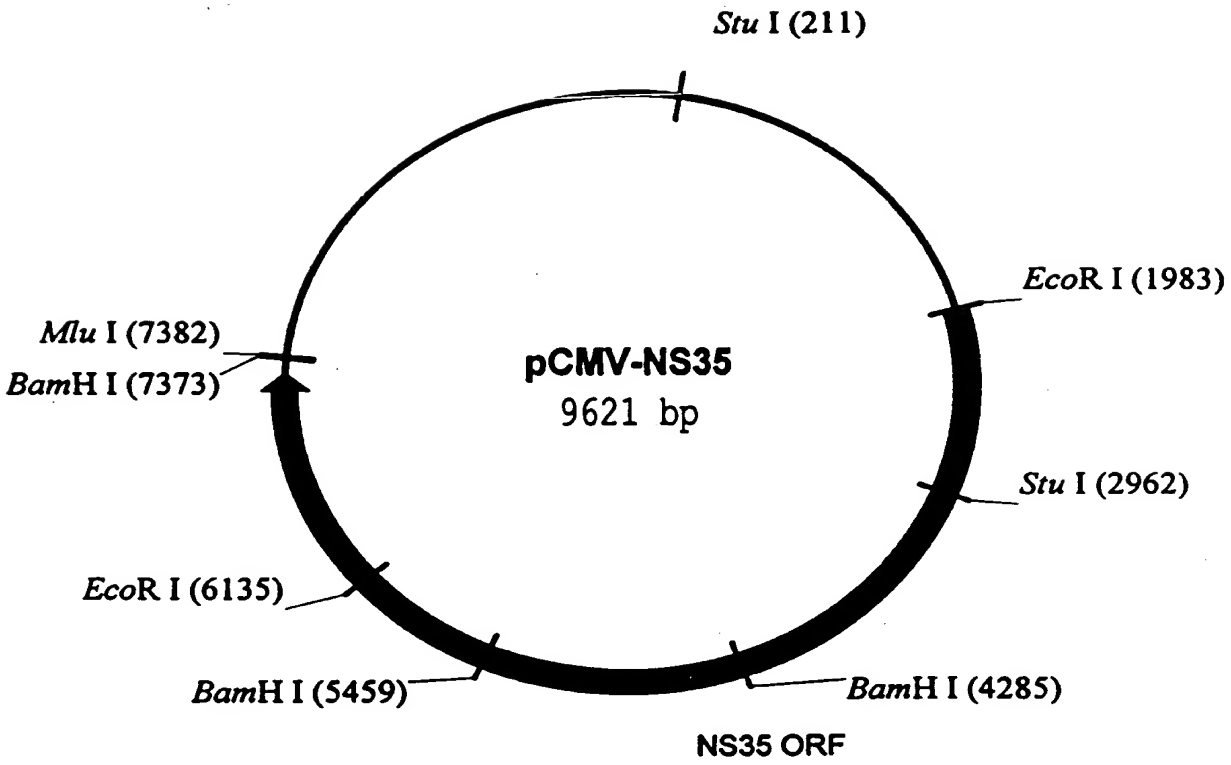

FIG. 2

PATENT & TRADEMARK OFFICE
OIPE
DEC 02 2002
JC13

pCMV-NS35

```
  1 TCGCGCGTTT CGGTGATGAC GGTGAAAACC TCTGACACAT GCAGCTCCCG GAGACGGTCA CAGCTTGTCT GTAAGCGGAT
    AGCGCGCAAA GCCACTACTG CCACTTTTGG AGACTGTGTA CGTCGAGGGC CTCTGCCAGT GTCGAACAGA CATTCGCCTA

 81 GCCGGGAGCA GACAAGCCCG TCAGGGCGCG TCAGCGGGTG TTGGCGGGTG TCGGGGCTGG CTTAACTATG CGGCATCAGA
    CGGCCCTCGT CTGTTCGGGC AGTCCCGCGC AGTCGCCCAC AACCGCCCAC AGCCCCGACC GAATTGATAC GCCGTAGTCT

                                                                    StuI
                                                                    -------
161 GCAGATTGTA CTGAGAGTGC ACCATATGAA GCTTTTTGCA AAAGCCTAGG CCTCCAAAAA AGCCTCCTCA CTACTTCTGG
    CGTCTAACAT GACTCTCACG TGGTATACTT CGAAAAACGT TTTCGGATCC GGAGGTTTTT TCGGAGGAGT GATGAAGACC

241 AATAGCTCAG AGGCCGAGGC GGCCTCGGCC TCTGCATAAA TAAAAAAAAT TAGTCAGCCA TGGGGCGGAG AATGGGCGGA
    TTATCGAGTC TCCGGCTCCG CCGGAGCCGG AGACGTATTT ATTTTTTTTA ATCAGTCGGT ACCCCGCCTC TTACCCGCCT

321 ACTGGGCGGG GAGGGAATTA TTGGCTATTG GCCATTGCAT ACGTTGTATC TATATCATAA TATGTACATT TATATTGGCT
    TGACCCGCCC CTCCCTTAAT AACCGATAAC CGGTAACGTA TGCAACATAG ATATAGTATT ATACATGTAA ATATAACCGA

401 CATGTCCAAT ATGACCGCCA TGTTGACATT GATTATTGAC TAGTTATTAA TAGTAATCAA TTACGGGGTC ATTAGTTCAT
    GTACAGGTTA TACTGGCGGT ACAACTGTAA CTAATAACTG ATCAATAATT ATCATTAGTT AATGCCCCAG TAATCAAGTA

481 AGCCCATATA TGGAGTTCCG CGTTACATAA CTTACGGTAA ATGGCCCGCC TGGCTGACCG CCCAACGACC CCCGCCCATT
    TCGGGTATAT ACCTCAAGGC GCAATGTATT GAATGCCATT TACCGGGCGG ACCGACTGGC GGGTTGCTGG GGGCGGGTAA

561 GACGTCAATA ATGACGTATG TTCCCATAGT AACGCCAATA GGGACTTTCC ATTGACGTCA ATGGGTGGAG TATTTACGGT
    CTGCAGTTAT TACTGCATAC AAGGGTATCA TTGCGGTTAT CCCTGAAAGG TAACTGCAGT TACCCACCTC ATAAATGCCA

641 AAACTGCCCA CTTGGCAGTA CATCAAGTGT ATCATATGCC AAGTCCGCCC CCTATTGACG TCAATGACGG TAAATGGCCC
    TTTGACGGGT GAACCGTCAT GTAGTTCACA TAGTATACGG TTCAGGCGGG GGATAACTGC AGTTACTGCC ATTTACCGGG
```

FIG. 3-1

PATENT & TRADEMARK OFFICE
DEC 0 2 2002
OIPE
JC13

pCMV-NS35

```
721   GCCTGGCATT ATGCCCAGTA CATGACCTTA CGGGACTTTC CTACTTGGCA GTACATCTAC GTATTAGTCA TCGCTATTAC
      CGGACCGTAA TACGGGTCAT GTACTGGAAT GCCCTGAAAG GATGAACCGT CATGTAGATG CATAATCAGT AGCGATAATG

801   CATGGTGATG CGGTTTTGGC AGTACACCAA TGGGCGTGGA TAGCGGTTTG ACTCACGGGG ATTTCCAAGT CTCCACCCCA
      GTACCACTAC GCCAAAACCG TCATGTGGTT ACCCGCACCT ATCGCCAAAC TGAGTGCCCC TAAAGGTTCA GAGGTGGGGT

881   TTGACGTCAA TGGGAGTTTG TTTTGGCACC AAAATCAACG GGACTTTCCA AAATGTCGTA ATAACCCCGC CCCGTTGACG
      AACTGCAGTT ACCCTCAAAC AAAACCGTGG TTTTAGTTGC CCTGAAAGGT TTTACAGCAT TATTGGGGCG GGGCAACTGC

961   CAAATGGGCG GTAGGCGTGT ACGGTGGGAG GTCTATATAA GCAGAGCTCG TTTAGTGAAC CGTCAGATCG CCTGGAGACG
      GTTTACCCGC CATCCGCACA TGCCACCCTC CAGATATATT CGTCTCGAGC AAATCACTTG GCAGTCTAGC GGACCTCTGC

1041  CCATCCACGC TGTTTTGACC TCCATAGAAG ACACCGGGAC CGATCCAGCC TCCGCGGCCG GGAACGGTGC ATTGGAACGC
      GGTAGGTGCG ACAAAACTGG AGGTATCTTC TGTGGCCCTG GCTAGGTCGG AGGCGCCGGC CCTTGCCACG TAACCTTGCG

1121  GGATTCCCCG TGCCAAGAGT GACGTAAGTA CCGCCTATAG ACTCTATAGG CACACCCCTT TGGCTCTTAT GCATGGTATA
      CCTAAGGGGC ACGGTTCTCA CTGCATTCAT GGCGGATATC TGAGATATCC GTGTGGGGAA ACCGAGAATA CGTACGATAT

1201  CTGTTTTTGG CTTGGGGCCT ATACACCCCC GCTCCTTATG CTATAGGTGA TGGTATAGCT TAGCCTATAG GTGTGGGTTA
      GACAAAAACC GAACCCCGGA TATGTGGGGG CGAGGAATAC GATATCCACT ACCATATCGA ATCGGATATC CACACCCAAT

1281  TTGACCATTA TTGACCACTC CCCTATTGGT GACGATACTT TCCATTACTA ATCCATAACA TGGCTCTTTG CCACAACTAT
      AACTGGTAAT AACTGGTGAG GGGATAACCA CTGCTATGAA AGGTAATGAT TAGGTATTGT ACCGAGAAAC GGTGTTGATA

1361  CTCTATTGGC TATATGCCAA TACTCTGTCC TTCAGAGACT GACACGGACT CTGTATTTTT ACAGGATGGG GTCCATTTAT
      GAGATAACCG ATATACGGTT ATGAGACAGG AAGTCTCTGA CTGTGCCTGA GACATAAAAA TGTCCTACCC CAGGTAAATA
```

FIG. 3-2

PATENT & TRADEMARK OFFICE
DEC 0 2 2002
OIPE
JC13

pCMV-NS35

```
1441  TATTTACAAA TTCACATATA CAACAACGCC GTCCCCCGTG CCCGCAGTTT TTATTAAACA TAGCGTGGGA TCTCCGACAT
      ATAAATGTTT AAGTGTATAT GTTGTTGCGG CAGGGGGCAC GGGCGTCAAA AATAATTTGT ATCGCACCCT AGAGGCTGTA

1521  CTCGGGTACG TGTTCCGGAC ATGGGCTCTT CTCCGGTAGC GGCGGAGCTT CCACATCCGA GCCCTGGTCC CATCCGTCCA
      GAGCCCATGC ACAAGGCCTG TACCCGAGAA GAGGCCATCG CCGCCTCGAA GGTGTAGGCT CGGGACCAGG GTAGGCAGGT

1601  GCGGCTCATG GTCGCTCGGC AGCTCCTTGC TCCTAACAGT GGAGGCCAGA CTTAGGCACA GCACAATGCC CACCACCACC
      CGCCGAGTAC CAGCGAGCCG TCGAGGAACG AGGATTGTCA CCTCCGGTCT GAATCCGTGT CGTGTTACGG GTGGTGGTGG

1681  AGTGTGCCGC ACAAGGCCGT GGCGGTAGGG TATGTGTCTG AAAATGAGCT CGGAGATTGG GCTCGCACCT GGACGCAGAT
      TCACACGGCG TGTTCCGGCA CCGCCATCCC ATACACAGAC TTTTACTCGA GCCTCTAACC CGAGCGTGGA CCTGCGTCTA

1761  GGAAGACTTA AGGCAGCGGC AGAAGAAGAT GCAGGCAGCT GAGTTGTTGT ATTCTGATAA GAGTCAGAGG TAACTCCCGT
      CCTTCTGAAT TCCGTCGCCG TCTTCTTCTA CGTCCGTCGA CTCAACAACA TAAGACTATT CTCAGTCTCC ATTGAGGGCA

1841  TGCGGTGCTG TTAACGGTGG AGGGCAGTGT AGTCTGAGCA GTACTCGTTG CTGCCGCGCG CGCCACCAGA CATAATAGCT
      ACGCCACGAC AATTGCCACC TCCCGTCACA TCAGACTCGT CATGAGCAAC GACGGCGCGC GCGGTGGTCT GTATTATCGA

   +2                                                                          M  A  A
                                                                        EcoRI
                                                                        ------
1921  GACAGACTAA CAGACTGTTC CTTTCCATGG GTCTTTTCTG CAGTCACCGT CGTCGACCTA AGAATTCACC ATGGCTGCAT
      CTGTCTGATT GTCTGACAAG GAAAGGTACC CAGAAAAGAC GTCAGTGGCA GCAGCTGGAT TCTTAAGTGG TACCGACGTA

   +2 Y  A  A  Q  G  Y  K  V  L  V  L  N  P  S  V  A  A  T  L  G  F  G  A  Y  M  S  K
2001  ATGCAGCTCA GGGCTATAAG GTGCTAGTAC TCAACCCCTC TGTTGCTGCA ACACTGGGCT TTGGTGCTTA CATGTCCAAG
      TACGTCGAGT CCCGATATTC CACGATCATG AGTTGGGGAG ACAACGACGT TGTGACCCGA AACCACGAAT GTACAGGTTC
```

FIG. 3-3

PATENT & TRADEMARK OFFICE
DEC 0 2 2002
OIPE
JC13

pCMV-NS35

```
   +2  A  H  G  I  D  P  N  I  R  T  G  V  R  T  I  T  T  G  S  P  I  T  Y  S  T  Y  G
2081  GCTCATGGGA TCGATCCTAA CATCAGGACC GGGGTGAGAA CAATTACCAC TGGCAGCCCC ATCACGTACT CCACCTACGG
      CGAGTACCCT AGCTAGGATT GTAGTCCTGG CCCCACTCTT GTTAATGGTG ACCGTCGGGG TAGTGCATGA GGTGGATGCC

   +2  K  F  L  A  D  G  G  C  S  G  G  A  Y  D  I  I  I  C  D  E  C  H  S  T  D  A
2161  CAAGTTCCTT GCCGACGGCG GGTGCTCGGG GGGCGCTTAT GACATAATAA TTTGTGACGA GTGCCACTCC ACGGATGCCA
      GTTCAAGGAA CGGCTGCCGC CCACGAGCCC CCCGCGAATA CTGTATTATT AAACACTGCT CACGGTGAGG TGCCTACGGT

   +2  T  S  I  L  G  I  G  T  V  L  D  Q  A  E  T  A  G  A  R  L  V  V  L  A  T  A  T
2241  CATCCATCTT GGGCATTGGC ACTGTCCTTG ACCAAGCAGA GACTGCGGGG GCGAGACTGG TTGTGCTCGC CACCGCCACC
      GTAGGTAGAA CCCGTAACCG TGACAGGAAC TGGTTCGTCT CTGACGCCCC CGCTCTGACC AACACGAGCG GTGGCGGTGG

   +2  P  P  G  S  V  T  V  P  H  P  N  I  E  E  V  A  L  S  T  T  G  E  I  P  F  Y  G
2321  CCTCCGGGCT CCGTCACTGT GCCCCATCCC AACATCGAGG AGGTTGCTCT GTCCACCACC GGAGAGATCC CTTTTTACGG
      GGAGGCCCGA GGCAGTGACA CGGGGTAGGG TTGTAGCTCC TCCAACGAGA CAGGTGGTGG CCTCTCTAGG GAAAAATGCC

   +2  K  A  I  P  L  E  V  I  K  G  G  R  H  L  I  F  C  H  S  K  K  K  C  D  E  L
2401  CAAGGCTATC CCCCTCGAAG TAATCAAGGG GGGGAGACAT CTCATCTTCT GTCATTCAAA GAAGAAGTGC GACGAACTCG
      GTTCCGATAG GGGGAGCTTC ATTAGTTCCC CCCCTCTGTA GAGTAGAAGA CAGTAAGTTT CTTCTTCACG CTGCTTGAGC

   +2  A  A  K  L  V  A  L  G  I  N  A  V  A  Y  Y  R  G  L  D  V  S  V  I  P  T  S  G
2481  CCGCAAAGCT GGTCGCATTG GGCATCAATG CCGTGGCCTA CTACCGCGGT CTTGACGTGT CCGTCATCCC GACCAGCGGC
      GGCGTTTCGA CCAGCGTAAC CCGTAGTTAC GGCACCGGAT GATGGCGCCA GAACTGCACA GGCAGTAGGG CTGGTCGCCG

   +2  D  V  V  V  V  A  T  D  A  L  M  T  G  Y  T  G  D  F  D  S  V  I  D  C  N  T  C
2561  GATGTTGTCG TCGTGGCAAC CGATGCCCTC ATGACCGGCT ATACCGGCGA CTTCGACTCG GTGATAGACT GCAATACGTG
      CTACAACAGC AGCACCGTTG GCTACGGGAG TACTGGCCGA TATGGCCGCT GAAGCTGAGC CACTATCTGA CGTTATGCAC
```

FIG. 3-4

PATENT & TRADEMARK OFFICE
DEC 0 2 2002
OIPE
JC13

pCMV-NS35

```
   +2   V  T  Q  T  V  D  F  S  L  D  P  T  F  T  I  E  T  I  T  L  P  Q  D  A  V  S
2641  TGTCACCCAG ACAGTCGATT TCAGCCTTGA CCCTACCTTC ACCATTGAGA CAATCACGCT CCCCCAAGAT GCTGTCTCCC
      ACAGTGGGTC TGTCAGCTAA AGTCGGAACT GGGATGGAAG TGGTAACTCT GTTAGTGCGA GGGGGTTCTA CGACAGAGGG

   +2 R  T  Q  R  R  G  R  T  G  R  G  K  P  G  I  Y  R  F  V  A  P  G  E  R  P  S  G
2721  GCACTCAACG TCGGGGCAGG ACTGGCAGGG GGAAGCCAGG CATCTACAGA TTTGTGGCAC CGGGGGAGCG CCCCTCCGGC
      CGTGAGTTGC AGCCCCGTCC TGACCGTCCC CCTTCGGTCC GTAGATGTCT AAACACCGTG GCCCCCTCGC GGGGAGGCCG

   +2  M  F  D  S  S  V  L  C  E  C  Y  D  A  G  C  A  W  Y  E  L  T  P  A  E  T  T  V
2801  ATGTTCGACT CGTCCGTCCT CTGTGAGTGC TATGACGCAG GCTGTGCTTG GTATGAGCTC ACGCCCGCCG AGACTACAGT
      TACAAGCTGA GCAGGCAGGA GACACTCACG ATACTGCGTC CGACACGAAC CATACTCGAG TGCGGGCGGC TCTGATGTCA

   +2   R  L  R  A  Y  M  N  T  P  G  L  P  V  C  Q  D  H  L  E  F  W  E  G  V  F  T
                                                                                StuI
                                                                                --
2881  TAGGCTACGA GCGTACATGA ACACCCCGGG GCTTCCCGTG TGCCAGGACC ATCTTGAATT TTGGGAGGGC GTCTTTACAG
      ATCCGATGCT CGCATGTACT TGTGGGGCCC CGAAGGGCAC ACGGTCCTGG TAGAACTTAA AACCCTCCCG CAGAAATGTC

   +2 G  L  T  H  I  D  A  H  F  L  S  Q  T  K  Q  S  G  E  N  L  P  Y  L  V  A  Y  Q
      StuI
      ----
2961  GCCTCACTCA TATAGATGCC CACTTTCTAT CCCAGACAAA GCAGAGTGGG GAGAACCTTC CTTACCTGGT AGCGTACCAA
      CGGAGTGAGT ATATCTACGG GTGAAAGATA GGGTCTGTTT CGTCTCACCC CTCTTGGAAG GAATGGACCA TCGCATGGTT

   +2  A  T  V  C  A  R  A  Q  A  P  P  P  S  W  D  Q  M  W  K  C  L  I  R  L  K  P  T
3041  GCCACCGTGT GCGCTAGGGC TCAAGCCCCT CCCCCATCGT GGGACCAGAT GTGGAAGTGT TTGATTCGCC TCAAGCCCAC
      CGGTGGCACA CGCGATCCCG AGTTCGGGGA GGGGGTAGCA CCCTGGTCTA CACCTTCACA AACTAAGCGG AGTTCGGGTG
```

FIG. 3-5

PATENT & TRADEMARK OFFICE DEC 0 2 2002 OIPE

pCMV-NS35

```
   +2   L  H  G   P  T  P  L   L  Y  R   L  G  A   V  Q  N  E   I  T  L   T  H  P   V  T  K
3121  CCTCCATGGG CCAACACCCC TGCTATACAG ACTGGGCGCT GTTCAGAATG AAATCACCCT GACGCACCCA GTCACCAAAT
      GGAGGTACCC GGTTGTGGGG ACGATATGTC TGACCCGCGA CAAGTCTTAC TTTAGTGGGA CTGCGTGGGT CAGTGGTTTA

   +2  Y  I  M  T   C  M  S   A  D  L  E   V  V  T   S  T  W   V  L  V  G   G  V  L   A  A  L
3201  ACATCATGAC ATGCATGTCG GCCGACCTGG AGGTCGTCAC GAGCACCTGG GTGCTCGTTG GCGGCGTCCT GGCTGCTTTG
      TGTAGTACTG TACGTACAGC CGGCTGGACC TCCAGCAGTG CTCGTGGACC CACGAGCAAC CGCCGCAGGA CCGACGAAAC

   +2  A  A  Y  C   L  S  T   G  C  V   V  I  V  G   R  V  V   L  S  G   K  P  A  I   I  P  D
3281  GCCGCGTATT GCCTGTCAAC AGGCTGCGTG GTCATAGTGG GCAGGGTCGT CTTGTCCGGG AAGCCGGCAA TCATACCTGA
      CGGCGCATAA CGGACAGTTG TCCGACGCAC CAGTATCACC CGTCCCAGCA GAACAGGCCC TTCGGCCGTT AGTATGGACT

   +2   R  E  V   L  Y  R  E   F  D  E   M  E  E   C  S  Q  H   L  P  Y   I  E  Q   G  M  M
3361  CAGGGAAGTC CTCTACCGAG AGTTCGATGA GATGGAAGAG TGCTCTCAGC ACTTACCGTA CATCGAGCAA GGGATGATGC
      GTCCCTTCAG GAGATGGCTC TCAAGCTACT CTACCTTCTC ACGAGAGTCG TGAATGGCAT GTAGCTCGTT CCCTACTACG

   +2  L  A  E  Q   F  K  Q   K  A  L  G   L  L  Q   T  A  S   R  Q  A  E   V  I  A   P  A  V
3441  TCGCCGAGCA GTTCAAGCAG AAGGCCCTCG GCCTCCTGCA GACCGCGTCC CGTCAGGCAG AGGTTATCGC CCCTGCTGTC
      AGCGGCTCGT CAAGTTCGTC TTCCGGGAGC CGGAGGACGT CTGGCGCAGG GCAGTCCGTC TCCAATAGCG GGGACGACAG

   +2  Q  T  N  W   Q  K  L   E  T  F   W  A  K  H   M  W  N   F  I  S   G  I  Q  Y   L  A  G
3521  CAGACCAACT GGCAAAAACT CGAGACCTTC TGGGCGAAGC ATATGTGGAA CTTCATCAGT GGGATACAAT ACTTGGCGGG
      GTCTGGTTGA CCGTTTTTGA GCTCTGGAAG ACCCGCTTCG TATACACCTT GAAGTAGTCA CCCTATGTTA TGAACCGCCC

   +2   L  S  T   L  P  G  N   P  A  I   A  S  L   M  A  F  T   A  A  V   T  S  P   L  T  T
3601  CTTGTCAACG CTGCCTGGTA ACCCCGCCAT TGCTTCATTG ATGGCTTTTA CAGCTGCTGT CACCAGCCCA CTAACCACTA
      GAACAGTTGC GACGGACCAT TGGGGCGGTA ACGAAGTAAC TACCGAAAAT GTCGACGACA GTGGTCGGGT GATTGGTGAT
```

FIG. 3-6

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE
1613

pCMV-NS35

```
   +2 S  Q  T  L  L  F  N  I  L  G  G  W  V  A  A  Q  L  A  A  P  G  A  A  T  A  F  V
3681  GCCAAACCCT CCTCTTCAAC ATATTGGGGG GGTGGGTGGC TGCCCAGCTC GCCGCCCCCG GTGCCGCTAC TGCCTTTGTG
      CGGTTTGGGA GGAGAAGTTG TATAACCCCC CCACCCACCG ACGGGTCGAG CGGCGGGGGC CACGGCGATG ACGGAAACAC

   +2  G  A  G  L  A  G  A  A  I  G  S  V  G  L  G  K  V  L  I  D  I  L  A  G  Y  G  A
3761  GGCGCTGGCT TAGCTGGCGC CGCCATCGGC AGTGTTGGAC TGGGGAAGGT CCTCATAGAC ATCCTTGCAG GGTATGGCGC
      CCGCGACCGA ATCGACCGCG GCGGTAGCCG TCACAACCTG ACCCCTTCCA GGAGTATCTG TAGGAACGTC CCATACCGCG

   +2  G  V  A  G  A  L  V  A  F  K  I  M  S  G  E  V  P  S  T  E  D  L  V  N  L  L
3841  GGGCGTGGCG GGAGCTCTTG TGGCATTCAA GATCATGAGC GGTGAGGTCC CCTCCACGGA GGACCTGGTC AATCTACTGC
      CCCGCACCGC CCTCGAGAAC ACCGTAAGTT CTAGTACTCG CCACTCCAGG GGAGGTGCCT CCTGGACCAG TTAGATGACG

   +2 P  A  I  L  S  P  G  A  L  V  V  G  V  V  C  A  A  I  L  R  R  H  V  G  P  G  E
3921  CCGCCATCCT CTCGCCCGGA GCCCTCGTAG TCGGCGTGGT CTGTGCAGCA ATACTGCGCC GGCACGTTGG CCCGGGCGAG
      GGCGGTAGGA GAGCGGGCCT CGGGAGCATC AGCCGCACCA GACACGTCGT TATGACGCGG CCGTGCAACC GGGCCCGCTC

   +2  G  A  V  Q  W  M  N  R  L  I  A  F  A  S  R  G  N  H  V  S  P  T  H  Y  V  P  E
4001  GGGGCAGTGC AGTGGATGAA CCGGCTGATA GCCTTCGCCT CCCGGGGGAA CCATGTTTCC CCCACGCACT ACGTGCCGGA
      CCCCGTCACG TCACCTACTT GGCCGACTAT CGGAAGCGGA GGGCCCCCTT GGTACAAAGG GGGTGCGTGA TGCACGGCCT

   +2  S  D  A  A  A  R  V  T  A  I  L  S  S  L  T  V  T  Q  L  L  R  R  L  H  Q  W
4081  GAGCGATGCA GCTGCCCGCG TCACTGCCAT ACTCAGCAGC CTCACTGTAA CCCAGCTCCT GAGGCGACTG CACCAGTGGA
      CTCGCTACGT CGACGGGCGC AGTGACGGTA TGAGTCGTCG GAGTGACATT GGGTCGAGGA CTCCGCTGAC GTGGTCACCT

   +2 I  S  S  E  C  T  T  P  C  S  G  S  W  L  R  D  I  W  D  W  I  C  E  V  L  S  D
4161  TAAGCTCGGA GTGTACCACT CCATGCTCCG GTTCCTGGCT AAGGGACATC TGGGACTGGA TATGCGAGGT GTTGAGCGAC
      ATTCGAGCCT CACATGGTGA GGTACGAGGC CAAGGACCGA TTCCCTGTAG ACCCTGACCT ATACGCTCCA CAACTCGCTG
```

FIG. 3-7

PATENT & TRADEMARK OFFICE
OIPE
DEC 02 2002
JC13

pCMV-NS35

```
   +2  F  K  T  W  L  K  A  K  L  M  P  Q  L  P  G  I  P  F  V  S  C  Q  R  G  Y  K  G
                                                 BamHI
                                                 -------
4241  TTTAAGACCT GGCTAAAAGC TAAGCTCATG CCACAGCTGC CTGGGATCCC CTTTGTGTCC TGCCAGCGCG GGTATAAGGG
      AAATTCTGGA CCGATTTTCG ATTCGAGTAC GGTGTCGACG GACCCTAGGG GAAACACAGG ACGGTCGCGC CCATATTCCC

   +2  V  W  R  G  D  G  I  M  H  T  R  C  H  C  G  A  E  I  T  G  H  V  K  N  G  T
4321  GGTCTGGCGA GGGGACGGCA TCATGCACAC TCGCTGCCAC TGTGGAGCTG AGATCACTGG ACATGTCAAA AACGGGACGA
      CCAGACCGCT CCCCTGCCGT AGTACGTGTG AGCGACGGTG ACACCTCGAC TCTAGTGACC TGTACAGTTT TTGCCCTGCT

   +2  M  R  I  V  G  P  R  T  C  R  N  M  W  S  G  T  F  P  I  N  A  Y  T  T  G  P  C
4401  TGAGGATCGT CGGTCCTAGG ACCTGCAGGA ACATGTGGAG TGGGACCTTC CCCATTAATG CCTACACCAC GGGCCCCTGT
      ACTCCTAGCA GCCAGGATCC TGGACGTCCT TGTACACCTC ACCCTGGAAG GGGTAATTAC GGATGTGGTG CCCGGGGACA

   +2  T  P  L  P  A  P  N  Y  T  F  A  L  W  R  V  S  A  E  E  Y  V  E  I  R  Q  V  G
4481  ACCCCCCTTC CTGCGCCGAA CTACACGTTC GCGCTATGGA GGGTGTCTGC AGAGGAATAC GTGGAGATAA GGCAGGTGGG
      TGGGGGGAAG GACGCGGCTT GATGTGCAAG CGCGATACCT CCCACAGACG TCTCCTTATG CACCTCTATT CCGTCCACCC

   +2  D  F  H  Y  V  T  G  M  T  T  D  N  L  K  C  P  C  Q  V  P  S  P  E  F  F  T
4561  GGACTTCCAC TACGTGACGG GTATGACTAC TGACAATCTT AAATGCCCGT GCCAGGTCCC ATCGCCCGAA TTTTTCACAG
      CCTGAAGGTG ATGCACTGCC CATACTGATG ACTGTTAGAA TTTACGGGCA CGGTCCAGGG TAGCGGGCTT AAAAAGTGTC

   +2  E  L  D  G  V  R  L  H  R  F  A  P  P  C  K  P  L  L  R  E  E  V  S  F  R  V  G
4641  AATTGGACGG GGTGCGCCTA CATAGGTTTG CGCCCCCCTG CAAGCCCTTG CTGCGGGAGG AGGTATCATT CAGAGTAGGA
      TTAACCTGCC CCACGCGGAT GTATCCAAAC GCGGGGGGAC GTTCGGGAAC GACGCCCTCC TCCATAGTAA GTCTCATCCT

   +2  L  H  E  Y  P  V  G  S  Q  L  P  C  E  P  E  P  D  V  A  V  L  T  S  M  L  T  D
4721  CTCCACGAAT ACCCGGTAGG GTCGCAATTA CCTTGCGAGC CCGAACCGGA CGTGGCCGTG TTGACGTCCA TGCTCACTGA
      GAGGTGCTTA TGGGCCATCC CAGCGTTAAT GGAACGCTCG GGCTTGGCCT GCACCGGCAC AACTGCAGGT ACGAGTGACT
```

FIG. 3-8

PATENT & TRADEMARK OFFICE
DEC 0 2 2002
OIPE
JC13

pCMV-NS35

```
   +2   P  S  H  I  T  A  E  A  A  G  R  R  L  A  R  G  S  P  P  S  V  A  S  S  S  A
4801  TCCCTCCCAT ATAACAGCAG AGGCGGCCGG GCGAAGGTTG GCGAGGGGAT CACCCCCCTC TGTGGCCAGC TCCTCGGCTA
      AGGGAGGGTA TATTGTCGTC TCCGCCGGCC CGCTTCCAAC CGCTCCCCTA GTGGGGGGAG ACACCGGTCG AGGAGCCGAT

   +2  S  Q  L  S  A  P  S  L  K  A  T  C  T  A  N  H  D  S  P  D  A  E  L  I  E  A  N
4881  GCCAGCTATC CGCTCCATCT CTCAAGGCAA CTTGCACCGC TAACCATGAC TCCCCTGATG CTGAGCTCAT AGAGGCCAAC
      CGGTCGATAG GCGAGGTAGA GAGTTCCGTT GAACGTGGCG ATTGGTACTG AGGGGACTAC GACTCGAGTA TCTCCGGTTG

   +2  L  L  W  R  Q  E  M  G  G  N  I  T  R  V  E  S  E  N  K  V  V  I  L  D  S  F  D
4961  CTCCTATGGA GGCAGGAGAT GGGCGGCAAC ATCACCAGGG TTGAGTCAGA AAACAAAGTG GTGATTCTGG ACTCCTTCGA
      GAGGATACCT CCGTCCTCTA CCCGCCGTTG TAGTGGTCCC AACTCAGTCT TTTGTTTCAC CACTAAGACC TGAGGAAGCT

   +2   P  L  V  A  E  E  D  E  R  E  I  S  V  P  A  E  I  L  R  K  S  R  R  F  A  Q
5041  TCCGCTTGTG GCGGAGGAGG ACGAGCGGGA GATCTCCGTA CCCGCAGAAA TCCTGCGGAA GTCTCGGAGA TTCGCCCAGG
      AGGCGAACAC CGCCTCCTCC TGCTCGCCCT CTAGAGGCAT GGGCGTCTTT AGGACGCCTT CAGAGCCTCT AAGCGGGTCC

   +2  A  L  P  V  W  A  R  P  D  Y  N  P  P  L  V  E  T  W  K  K  P  D  Y  E  P  P  V
5121  CCCTGCCCGT TTGGGCGCGG CCGGACTATA ACCCCCCGCT AGTGGAGACG TGGAAAAAGC CCGACTACGA ACCACCTGTG
      GGGACGGGCA AACCCGCGCC GGCCTGATAT TGGGGGGCGA TCACCTCTGC ACCTTTTTCG GGCTGATGCT TGGTGGACAC

   +2  V  H  G  C  P  L  P  P  P  K  S  P  P  V  P  P  P  R  K  K  R  T  V  V  L  T  E
5201  GTCCATGGCT GCCCGCTTCC ACCTCCAAAG TCCCCTCCTG TGCCTCCGCC TCGGAAGAAG CGGACGGTGG TCCTCACTGA
      CAGGTACCGA CGGGCGAAGG TGGAGGTTTC AGGGGAGGAC ACGGAGGCGG AGCCTTCTTC GCCTGCCACC AGGAGTGACT

   +2   S  T  L  S  T  A  L  A  E  L  A  T  R  S  F  G  S  S  S  T  S  G  I  T  G  D
5281  ATCAACCCTA TCTACTGCCT TGGCCGAGCT CGCCACCAGA AGCTTTGGCA GCTCCTCAAC TTCCGGCATT ACGGGCGACA
      TAGTTGGGAT AGATGACGGA ACCGGCTCGA GCGGTGGTCT TCGAAACCGT CGAGGAGTTG AAGGCCGTAA TGCCCGCTGT
```

FIG. 3-9

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE
JC13

pCMV-NS35

```
  +2 N  T  T  T  S  S  E  P  A  P  S  G  C  P  P  D  S  D  A  E  S  Y  S  S  M  P  P
5361 ATACGACAAC ATCCTCTGAG CCCGCCCCTT CTGGCTGCCC CCCCGACTCC GACGCTGAGT CCTATTCCTC CATGCCCCCC
     TATGCTGTTG TAGGAGACTC GGGCGGGGAA GACCGACGGG GGGGCTGAGG CTGCGACTCA GGATAAGGAG GTACGGGGGG

  +2 L  E  G  E  P  G  D  P  D  L  S  D  G  S  W  S  T  V  S  S  E  A  N  A  E  D  V
                        BamHI
                        -------
5441 CTGGAGGGGG AGCCTGGGGA TCCGGATCTT AGCGACGGGT CATGGTCAAC GGTCAGTAGT GAGGCCAACG CGGAGGATGT
     GACCTCCCCC TCGGACCCCT AGGCCTAGAA TCGCTGCCCA GTACCAGTTG CCAGTCATCA CTCCGGTTGC GCCTCCTACA

  +2  V  C  C  S  M  S  Y  S  W  T  G  A  L  V  T  P  C  A  A  E  E  Q  K  L  P  I
5521 CGTGTGCTGC TCAATGTCTT ACTCTTGGAC AGGCGCACTC GTCACCCCGT GCGCCGCGGA AGAACAGAAA CTGCCCATCA
     GCACACGACG AGTTACAGAA TGAGAACCTG TCCGCGTGAG CAGTGGGGCA CGCGGCGCCT TCTTGTCTTT GACGGGTAGT

  +2 N  A  L  S  N  S  L  L  R  H  H  N  L  V  Y  S  T  T  S  R  S  A  C  Q  R  Q  K
5601 ATGCACTAAG CAACTCGTTG CTACGTCACC ACAATTTGGT GTATTCCACC ACCTCACGCA GTGCTTGCCA AAGGCAGAAG
     TACGTGATTC GTTGAGCAAC GATGCAGTGG TGTTAAACCA CATAAGGTGG TGGAGTGCGT CACGAACGGT TTCCGTCTTC

  +2  K  V  T  F  D  R  L  Q  V  L  D  S  H  Y  Q  D  V  L  K  E  V  K  A  A  A  S  K
5681 AAAGTCACAT TTGACAGACT GCAAGTTCTG GACAGCCATT ACCAGGACGT ACTCAAGGAG GTTAAAGCAG CGGCGTCAAA
     TTTCAGTGTA AACTGTCTGA CGTTCAAGAC CTGTCGGTAA TGGTCCTGCA TGAGTTCCTC CAATTTCGTC GCCGCAGTTT

  +2  V  K  A  N  L  L  S  V  E  E  A  C  S  L  T  P  P  H  S  A  K  S  K  F  G  Y
5761 AGTGAAGGCT AACTTGCTAT CCGTAGAGGA AGCTTGCAGC CTGACGCCCC CACACTCAGC CAAATCCAAG TTTGGTTATG
     TCACTTCCGA TTGAACGATA GGCATCTCCT TCGAACGTCG GACTGCGGGG GTGTGAGTCG GTTTAGGTTC AAACCAATAC
```

FIG. 3-10

PATENT & TRADEMARK OFFICE DEC 0 2 2002 TC 1700 OIPE

pCMV-NS35

```
   +2 G  A  K  D   V  R  C   H  A  R  K   A  V  T   H  I  N   S  V  W  K   D  L  L   E  D  N
5841  GGGCAAAAGA CGTCCGTTGC CATGCCAGAA AGGCCGTAAC CCACATCAAC TCCGTGTGGA AAGACCTTCT GGAAGACAAT
      CCCGTTTTCT GCAGGCAACG GTACGGTCTT TCCGGCATTG GGTGTAGTTG AGGCACACCT TTCTGGAAGA CCTTCTGTTA

   +2  V  T  P  I   D  T  T   I  M  A   K  N  E  V   F  C  V   Q  P  E   K  G  G  R   K  P  A
5921  GTAACACCAA TAGACACTAC CATCATGGCT AAGAACGAGG TTTTCTGCGT TCAGCCTGAG AAGGGGGGTC GTAAGCCAGC
      CATTGTGGTT ATCTGTGATG GTAGTACCGA TTCTTGCTCC AAAAGACGCA AGTCGGACTC TTCCCCCCAG CATTCGGTCG

   +2   R  L  I   V  F  P  D   L  G  V   R  V  C   E  K  M  A   L  Y  D   V  V  T   K  L  P
6001  TCGTCTCATC GTGTTCCCCG ATCTGGGCGT GCGCGTGTGC GAAAAGATGG CTTTGTACGA CGTGGTTACA AAGCTCCCCT
      AGCAGAGTAG CACAAGGGGC TAGACCCGCA CGCGCACACG CTTTTCTACC GAAACATGCT GCACCAATGT TTCGAGGGGA

   +2 L  A  V  M   G  S  S   Y  G  F  Q   Y  S  P   G  Q  R   V  E  F  L   V  Q  A   W  K  S
                                                              EcoRI
                                                              ------
6081  TGGCCGTGAT GGGAAGCTCC TACGGATTCC AATACTCACC AGGACAGCGG GTTGAATTCC TCGTGCAAGC GTGGAAGTCC
      ACCGGCACTA CCCTTCGAGG ATGCCTAAGG TTATGAGTGG TCCTGTCGCC CAACTTAAGG AGCACGTTCG CACCTTCAGG

   +2  K  K  T  P   M  G  F   S  Y  D   T  R  C  F   D  S  T   V  T  E   S  D  I  R   T  E  E
6161  AAGAAAACCC CAATGGGGTT CTCGTATGAT ACCCGCTGCT TTGACTCCAC AGTCACTGAG AGCGACATCC GTACGGAGGA
      TTCTTTTGGG GTTACCCCAA GAGCATACTA TGGGCGACGA AACTGAGGTG TCAGTGACTC TCGCTGTAGG CATGCCTCCT

   +2   A  I  Y   Q  C  C  D   L  D  P   Q  A  R   V  A  I  K   S  L  T   E  R  L   Y  V  G
6241  GGCAATCTAC CAATGTTGTG ACCTCGACCC CCAAGCCCGC GTGGCCATCA AGTCCCTCAC CGAGAGGCTT TATGTTGGGG
      CCGTTAGATG GTTACAACAC TGGAGCTGGG GGTTCGGGCG CACCGGTAGT TCAGGGAGTG GCTCTCCGAA ATACAACCCC

   +2 G  P  L  T   N  S  R   G  E  N  C   G  Y  R   R  C  R   A  S  G  V   L  T  T   S  C  G
6321  GCCCTCTTAC CAATTCAAGG GGGGAGAACT GCGGCTATCG CAGGTGCCGC GCGAGCGGCG TACTGACAAC TAGCTGTGGT
      CGGGAGAATG GTTAAGTTCC CCCCTCTTGA CGCCGATAGC GTCCACGGCG CGCTCGCCGC ATGACTGTTG ATCGACACCA
```

FIG. 3-11

PATENT & TRADEMARK OFFICE
OIPE
DEC 02 2002
JC13

pCMV-NS35

```
   +2  N  T  L  T  C  Y  I  K  A  R  A  A  C  R  A  A  G  L  Q  D  C  T  M  L  V  C  G
6401   AACACCCTCA CTTGCTACAT CAAGGCCCGG GCAGCCTGTC GAGCCGCAGG GCTCCAGGAC TGCACCATGC TCGTGTGTGG
       TTGTGGGAGT GAACGATGTA GTTCCGGGCC CGTCGGACAG CTCGGCGTCC CGAGGTCCTG ACGTGGTACG AGCACACACC

   +2  D  D  L  V  V  I  C  E  S  A  G  V  Q  E  D  A  A  S  L  R  A  F  T  E  A  M
6481   CGACGACTTA GTCGTTATCT GTGAAAGCGC GGGGGTCCAG GAGGACGCGG CGAGCCTGAG AGCCTTCACG GAGGCTATGA
       GCTGCTGAAT CAGCAATAGA CACTTTCGCG CCCCCAGGTC CTCCTGCGCC GCTCGGACTC TCGGAAGTGC CTCCGATACT

   +2  T  R  Y  S  A  P  P  G  D  P  P  Q  P  E  Y  D  L  E  L  I  T  S  C  S  S  N  V
6561   CCAGGTACTC CGCCCCCCCT GGGGACCCCC CACAACCAGA ATACGACTTG GAGCTCATAA CATCATGCTC CTCCAACGTG
       GGTCCATGAG GCGGGGGGGA CCCCTGGGGG GTGTTGGTCT TATGCTGAAC CTCGAGTATT GTAGTACGAG GAGGTTGCAC

   +2  S  V  A  H  D  G  A  G  K  R  V  Y  Y  L  T  R  D  P  T  T  P  L  A  R  A  A  W
6641   TCAGTCGCCC ACGACGGCGC TGGAAAGAGG GTCTACTACC TCACCCGTGA CCCTACAACC CCCCTCGCGA GAGCTGCGTG
       AGTCAGCGGG TGCTGCCGCG ACCTTTCTCC CAGATGATGG AGTGGGCACT GGGATGTTGG GGGGAGCGCT CTCGACGCAC

   +2  E  T  A  R  H  T  P  V  N  S  W  L  G  N  I  I  M  F  A  P  T  L  W  A  R  M
6721   GGAGACAGCA AGACACACTC CAGTCAATTC CTGGCTAGGC AACATAATCA TGTTTGCCCC CACACTGTGG GCGAGGATGA
       CCTCTGTCGT TCTGTGTGAG GTCAGTTAAG GACCGATCCG TTGTATTAGT ACAAACGGGG GTGTGACACC CGCTCCTACT

   +2  I  L  M  T  H  F  F  S  V  L  I  A  R  D  Q  L  E  Q  A  L  D  C  E  I  Y  G  A
6801   TACTGATGAC CCATTTCTTT AGCGTCCTTA TAGCCAGGGA CCAGCTTGAA CAGGCCCTCG ATTGCGAGAT CTACGGGGCC
       ATGACTACTG GGTAAAGAAA TCGCAGGAAT ATCGGTCCCT GGTCGAACTT GTCCGGGAGC TAACGCTCTA GATGCCCCGG

   +2  C  Y  S  I  E  P  L  D  L  P  P  I  I  Q  R  L  H  G  L  S  A  F  S  L  H  S  Y
6881   TGCTACTCCA TAGAACCACT GGATCTACCT CCAATCATTC AAAGACTCCA TGGCCTCAGC GCATTTTCAC TCCACAGTTA
       ACGATGAGGT ATCTTGGTGA CCTAGATGGA GGTTAGTAAG TTTCTGAGGT ACCGGAGTCG CGTAAAAGTG AGGTGTCAAT
```

FIG. 3-12

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE
JC13

pCMV-NS35

```
   +2   S  P  G   E  I  N  R   V  A  A   C  L  R   K  L  G  V   P  P  L   R  A  W   R  H  R
6961  CTCTCCAGGT GAAATCAATA GGGTGGCCGC ATGCCTCAGA AAACTTGGGG TACCGCCCTT GCGAGCTTGG AGACACCGGG
      GAGAGGTCCA CTTTAGTTAT CCCACCGGCG TACGGAGTCT TTTGAACCCC ATGGCGGGAA CGCTCGAACC TCTGTGGCCC

   +2  A  R  S  V   R  A  R   L  L  A  R   G  G  R   A  A  I   C  G  K  Y   L  F  N   W  A  V
7041  CCCGGAGCGT CCGCGCTAGG CTTCTGGCCA GAGGAGGCAG GGCTGCCATA TGTGGCAAGT ACCTCTTCAA CTGGGCAGTA
      GGGCCTCGCA GGCGCGATCC GAAGACCGGT CTCCTCCGTC CCGACGGTAT ACACCGTTCA TGGAGAAGTT GACCCGTCAT

   +2  R  T  K  L   K  L  T   P  I  A   A  A  G  Q   L  D  L   S  G  W   F  T  A  G   Y  S  G
7121  AGAACAAAGC TCAAACTCAC TCCAATAGCG GCCGCTGGCC AGCTGGACTT GTCCGGCTGG TTCACGGCTG GCTACAGCGG
      TCTTGTTTCG AGTTTGAGTG AGGTTATCGC CGGCGACCGG TCGACCTGAA CAGGCCGACC AAGTGCCGAC CGATGTCGCC

   +2   G  D  I   Y  H  S  V   S  H  A   R  P  R   W  I  W  F   C  L  L   L  L  A   A  G  V
7201  GGGAGACATT TATCACAGCG TGTCTCATGC CCGGCCCCGC TGGATCTGGT TTTGCCTACT CCTGCTTGCT GCAGGGGTAG
      CCCTCTGTAA ATAGTGTCGC ACAGAGTACG GGCCCGGGCG ACCTAGACCA AAACGGATGA GGACGAACGA CGTCCCCATC

   +2  G  I  Y  L   L  P  N   R
7281  GCATCTACCT CCTCCCCAAC CGATGAAGGT TGGGGTAAAC ACTCCGGCCT AAAAAAAAAA AAAAATCTAG AAAGGCGCGC
      CGTAGATGGA GGAGGGGTTG GCTACTTCCA ACCCCATTTG TGAGGCCGGA TTTTTTTTTT TTTTTAGATC TTTCCGCGCG

                    BAMHI      MluI
                    ------     ------
7361  CAAGATATCA AGGATCCACT ACGCGTTAGA GCTCGCTGAT CAGCCTCGAC TGTGCCTTCT AGTTGCCAGC CATCTGTTGT
      GTTCTATAGT TCCTAGGTGA TGCGCAATCT CGAGCGACTA GTCGGAGCTG ACACGGAAGA TCAACGGTCG GTAGACAACA

7441  TTGCCCCTCC CCCGTGCCTT CCTTGACCCT GGAAGGTGCC ACTCCCACTG TCCTTTCCTA ATAAAATGAG GAAATTGCAT
      AACGGGGAGG GGGCACGGAA GGAACTGGGA CCTTCCACGG TGAGGGTGAC AGGAAAGGAT TATTTTACTC CTTTAACGTA
```

FIG. 3-13

PATENT & TRADEMARK OFFICE
DEC 02 2002
JC13

pCMV-NS35

```
7521  CGCATTGTCT GAGTAGGTGT CATTCTATTC TGGGGGGTGG GGTGGGGCAG GACAGCAAGG GGGAGGATTG GGAAGACAAT
      GCGTAACAGA CTCATCCACA GTAAGATAAG ACCCCCCACC CCACCCCGTC CTGTCGTTCC CCCTCCTAAC CCTTCTGTTA

7601  AGCAGGCATG CTGGGGAGCT CTTCCGCTTC CTCGCTCACT GACTCGCTGC GCTCGGTCGT TCGGCTGCGG CGAGCGGTAT
      TCGTCCGTAC GACCCCTCGA GAAGGCGAAG GAGCGAGTGA CTGAGCGACG CGAGCCAGCA AGCCGACGCC GCTCGCCATA

7681  CAGCTCACTC AAAGGCGGTA ATACGGTTAT CCACAGAATC AGGGGATAAC GCAGGAAAGA ACATGTGAGC AAAAGGCCAG
      GTCGAGTGAG TTTCCGCCAT TATGCCAATA GGTGTCTTAG TCCCCTATTG CGTCCTTTCT TGTACACTCG TTTTCCGGTC

7761  CAAAAGGCCA GGAACCGTAA AAAGGCCGCG TTGCTGGCGT TTTTCCATAG GCTCCGCCCC CCTGACGAGC ATCACAAAAA
      GTTTTCCGGT CCTTGGCATT TTTCCGGCGC AACGACCGCA AAAAGGTATC CGAGGCGGGG GGACTGCTCG TAGTGTTTTT

7841  TCGACGCTCA AGTCAGAGGT GGCGAAACCC GACAGGACTA TAAAGATACC AGGCGTTTCC CCCTGGAAGC TCCCTCGTGC
      AGCTGCGAGT TCAGTCTCCA CCGCTTTGGG CTGTCCTGAT ATTTCTATGG TCCGCAAAGG GGGACCTTCG AGGGAGCACG

7921  GCTCTCCTGT TCCGACCCTG CCGCTTACCG GATACCTGTC CGCCTTTCTC CCTTCGGGAA GCGTGGCGCT TTCTCAATGC
      CGAGAGGACA AGGCTGGGAC GGCGAATGGC CTATGGACAG GCGGAAAGAG GGAAGCCCTT CGCACCGCGA AAGAGTTACG

8001  TCACGCTGTA GGTATCTCAG TTCGGTGTAG GTCGTTCGCT CCAAGCTGGG CTGTGTGCAC GAACCCCCCG TTCAGCCCGA
      AGTGCGACAT CCATAGAGTC AAGCCACATC CAGCAAGCGA GGTTCGACCC GACACACGTG CTTGGGGGGC AAGTCGGGCT

8081  CCGCTGCGCC TTATCCGGTA ACTATCGTCT TGAGTCCAAC CCGGTAAGAC ACGACTTATC GCCACTGGCA GCAGCCACTG
      GGCGACGCGG AATAGGCCAT TGATAGCAGA ACTCAGGTTG GGCCATTCTG TGCTGAATAG CGGTGACCGT CGTCGGTGAC

8161  GTAACAGGAT TAGCAGAGCG AGGTATGTAG GCGGTGCTAC AGAGTTCTTG AAGTGGTGGC CTAACTACGG CTACACTAGA
      CATTGTCCTA ATCGTCTCGC TCCATACATC CGCCACGATG TCTCAAGAAC TTCACCACCG GATTGATGCC GATGTGATCT
```

FIG. 3-14

OIPE
DEC 02 2002
PATENT & TRADEMARK OFFICE
JC13

pCMV-NS35

```
8241  AGGACAGTAT TTGGTATCTG CGCTCTGCTG AAGCCAGTTA CCTTCGGAAA AAGAGTTGGT AGCTCTTGAT CCGGCAAACA
      TCCTGTCATA AACCATAGAC GCGAGACGAC TTCGGTCAAT GGAAGCCTTT TTCTCAACCA TCGAGAACTA GGCCGTTTGT

8321  AACCACCGCT GGTAGCGGTG GTTTTTTTGT TTGCAAGCAG CAGATTACGC GCAGAAAAAA AGGATCTCAA GAAGATCCTT
      TTGGTGGCGA CCATCGCCAC CAAAAAAACA AACGTTCGTC GTCTAATGCG CGTCTTTTTT TCCTAGAGTT CTTCTAGGAA

8401  TGATCTTTTC TACGGGGTCT GACGCTCAGT GGAACGAAAA CTCACGTTAA GGGATTTTGG TCATGAGATT ATCAAAAAGG
      ACTAGAAAAG ATGCCCCAGA CTGCGAGTCA CCTTGCTTTT GAGTGCAATT CCCTAAAACC AGTACTCTAA TAGTTTTTCC

8481  ATCTTCACCT AGATCCTTTT AAATTAAAAA TGAAGTTTTA AATCAATCTA AAGTATATAT GAGTAAACTT GGTCTGACAG
      TAGAAGTGGA TCTAGGAAAA TTTAATTTTT ACTTCAAAAT TTAGTTAGAT TTCATATATA CTCATTTGAA CCAGACTGTC

8561  TTACCAATGC TTAATCAGTG AGGCACCTAT CTCAGCGATC TGTCTATTTC GTTCATCCAT AGTTGCCTGA CTCCCCGTCG
      AATGGTTACG AATTAGTCAC TCCGTGGATA GAGTCGCTAG ACAGATAAAG CAAGTAGGTA TCAACGGACT GAGGGGCAGC

8641  TGTAGATAAC TACGATACGG GAGGGCTTAC CATCTGGCCC CAGTGCTGCA ATGATACCGC GAGACCCACG CTCACCGGCT
      ACATCTATTG ATGCTATGCC CTCCCGAATG GTAGACCGGG GTCACGACGT TACTATGGCG CTCTGGGTGC GAGTGGCCGA

8721  CCAGATTTAT CAGCAATAAA CCAGCCAGCC GGAAGGGCCG AGCGCAGAAG TGGTCCTGCA ACTTTATCCG CCTCCATCCA
      GGTCTAAATA GTCGTTATTT GGTCGGTCGG CCTTCCCGGC TCGCGTCTTC ACCAGGACGT TGAAATAGGC GGAGGTAGGT

8801  GTCTATTAAT TGTTGCCGGG AAGCTAGAGT AAGTAGTTCG CCAGTTAATA GTTTGCGCAA CGTTGTTGCC ATTGCTACAG
      CAGATAATTA ACAACGGCCC TTCGATCTCA TTCATCAAGC GGTCAATTAT CAAACGCGTT GCAACAACGG TAACGATGTC

8881  GCATCGTGGT GTCACGCTCG TCGTTTGGTA TGGCTTCATT CAGCTCCGGT TCCCAACGAT CAAGGCGAGT TACATGATCC
      CGTAGCACCA CAGTGCGAGC AGCAAACCAT ACCGAAGTAA GTCGAGGCCA AGGGTTGCTA GTTCCGCTCA ATGTACTAGG
```

FIG. 3-15

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE
JC13

pCMV-NS35

```
8961  CCCATGTTGT GCAAAAAAGC GGTTAGCTCC TTCGGTCCTC CGATCGTTGT CAGAAGTAAG TTGGCCGCAG TGTTATCACT
      GGGTACAACA CGTTTTTTCG CCAATCGAGG AAGCCAGGAG GCTAGCAACA GTCTTCATTC AACCGGCGTC ACAATAGTGA

9041  CATGGTTATG GCAGCACTGC ATAATTCTCT TACTGTCATG CCATCCGTAA GATGCTTTTC TGTGACTGGT GAGTACTCAA
      GTACCAATAC CGTCGTGACG TATTAAGAGA ATGACAGTAC GGTAGGCATT CTACGAAAAG ACACTGACCA CTCATGAGTT

9121  CCAAGTCATT CTGAGAATAG TGTATGCGGC GACCGAGTTG CTCTTGCCCG GCGTCAATAC GGGATAATAC CGCGCCACAT
      GGTTCAGTAA GACTCTTATC ACATACGCCG CTGGCTCAAC GAGAACGGGC CGCAGTTATG CCCTATTATG GCGCGGTGTA

9201  AGCAGAACTT TAAAAGTGCT CATCATTGGA AAACGTTCTT CGGGGCGAAA ACTCTCAAGG ATCTTACCGC TGTTGAGATC
      TCGTCTTGAA ATTTTCACGA GTAGTAACCT TTTGCAAGAA GCCCCGCTTT TGAGAGTTCC TAGAATGGCG ACAACTCTAG

9281  CAGTTCGATG TAACCCACTC GTGCACCCAA CTGATCTTCA GCATCTTTTA CTTTCACCAG CGTTTCTGGG TGAGCAAAAA
      GTCAAGCTAC ATTGGGTGAG CACGTGGGTT GACTAGAAGT CGTAGAAAAT GAAAGTGGTC GCAAAGACCC ACTCGTTTTT

9361  CAGGAAGGCA AAATGCCGCA AAAAAGGGAA TAAGGGCGAC ACGGAAATGT TGAATACTCA TACTCTTCCT TTTTCAATAT
      GTCCTTCCGT TTTACGGCGT TTTTTCCCTT ATTCCCGCTG TGCCTTTACA ACTTATGAGT ATGAGAAGGA AAAAGTTATA

9441  TATTGAAGCA TTTATCAGGG TTATTGTCTC ATGAGCGGAT ACATATTTGA ATGTATTTAG AAAAATAAAC AAATAGGGGT
      ATAACTTCGT AAATAGTCCC AATAACAGAG TACTCGCCTA TGTATAAACT TACATAAATC TTTTTATTTG TTTATCCCCA

9521  TCCGCGCACA TTTCCCCGAA AAGTGCCACC TGACGTCTAA GAAACCATTA TTATCATGAC ATTAACCTAT AAAAATAGGC
      AGGCGCGTGT AAAGGGGCTT TTCACGGTGG ACTGCAGATT CTTTGGTAAT AATAGTACTG TAATTGGATA TTTTTATCCG

9601  GTATCACGAG GCCCTTTCGT C
      CATAGTGCTC CGGGAAAGCA G
```

FIG. 3-16

OIPE
DEC 0 2 2002
PATENT & TRADEMARK OFFICE
JC13

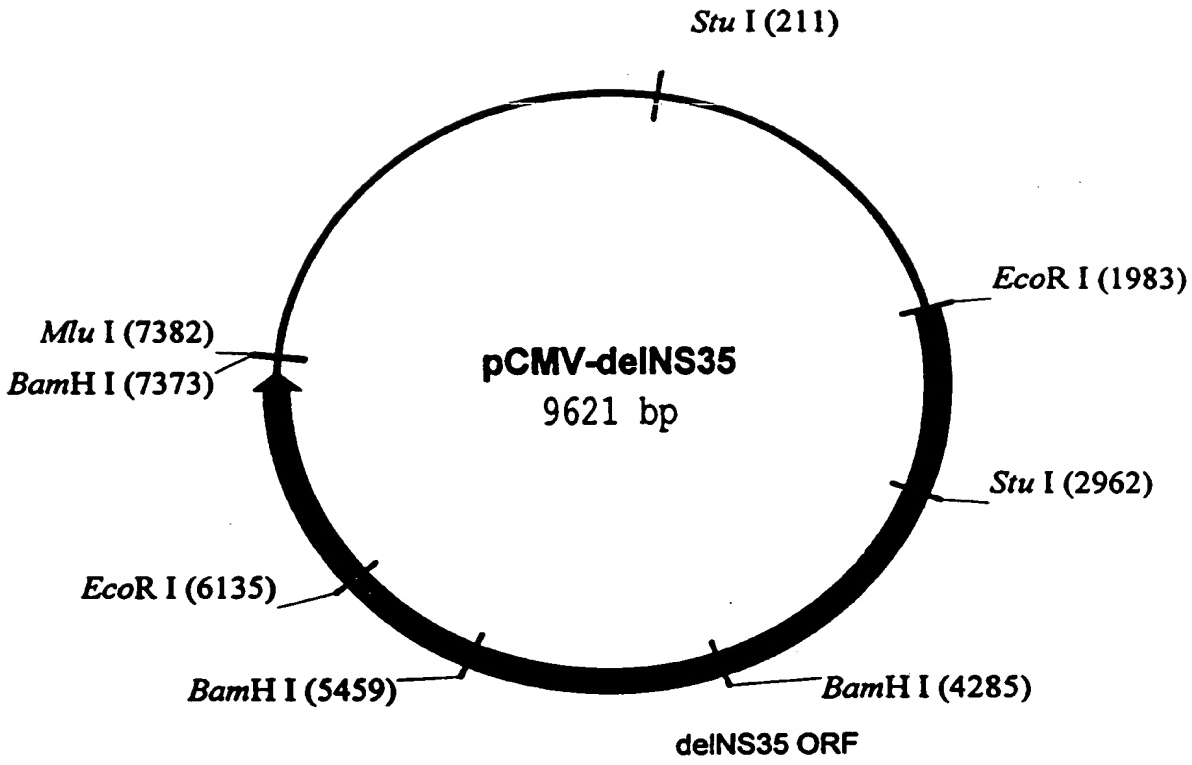

FIG. 4

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE
JC13

pCMV-delNS35

```
   1  TCGCGCGTTT CGGTGATGAC GGTGAAAACC TCTGACACAT GCAGCTCCCG GAGACGGTCA CAGCTTGTCT GTAAGCGGAT
      AGCGCGCAAA GCCACTACTG CCACTTTTGG AGACTGTGTA CGTCGAGGGC CTCTGCCAGT GTCGAACAGA CATTCGCCTA

  81  GCCGGGAGCA GACAAGCCCG TCAGGGCGCG TCAGCGGGTG TTGGCGGGTG TCGGGGCTGG CTTAACTATG CGGCATCAGA
      CGGCCCTCGT CTGTTCGGGC AGTCCCGCGC AGTCGCCCAC AACCGCCCAC AGCCCCGACC GAATTGATAC GCCGTAGTCT

                                                                    StuI
                                                                    -------
 161  GCAGATTGTA CTGAGAGTGC ACCATATGAA GCTTTTTGCA AAAGCCTAGG CCTCCAAAAA AGCCTCCTCA CTACTTCTGG
      CGTCTAACAT GACTCTCACG TGGTATACTT CGAAAAACGT TTTCGGATCC GGAGGTTTTT TCGGAGGAGT GATGAAGACC

 241  AATAGCTCAG AGGCCGAGGC GGCCTCGGCC TCTGCATAAA TAAAAAAAAT TAGTCAGCCA TGGGGCGGAG ATTGGGCGGA
      TTATCGAGTC TCCGGCTCCG CCGGAGCCGG AGACGTATTT ATTTTTTTTA ATCAGTCGGT ACCCCGCCTC TTACCCGCCT

 321  ACTGGGCGGG GAGGGAATTA TTGGCTATTG GCCATTGCAT ACGTTGTATC TATATCATAA TATGTACATT TATATTGGCT
      TGACCCGCCC CTCCCTTAAT AACCGATAAC CGGTAACGTA TGCAACATAG ATATAGTATT ATACATGTAA ATATAACCGA

 401  CATGTCCAAT ATGACCGCCA TGTTGACATT GATTATTGAC TAGTTATTAA TAGTAATCAA TTACGGGGTC ATTAGTTCAT
      GTACAGGTTA TACTGGCGGT ACAACTGTAA CTAATAACTG ATCAATAATT ATCATTAGTT AATGCCCCAG TAATCAAGTA

 481  AGCCCATATA TGGAGTTCCG CGTTACATAA CTTACGGTAA ATGGCCCGCC TGGCTGACCG CCCAACGACC CCCGCCCATT
      TCGGGTATAT ACCTCAAGGC GCAATGTATT GAATGCCATT TACCGGGCGG ACCGACTGGC GGGTTGCTGG GGGCGGGTAA

 561  GACGTCAATA ATGACGTATG TTCCCATAGT AACGCCAATA GGGACTTTCC ATTGACGTCA ATGGGTGGAG TATTTACGGT
      CTGCAGTTAT TACTGCATAC AAGGGTATCA TTGCGGTTAT CCCTGAAAGG TAACTGCAGT TACCCACCTC ATAAATGCCA
```

FIG. 5-1

PATENT & TRADEMARK OFFICE
DEC 0 2 2002
OIPE
JC13

pCMV-delNS35

641 AAACTGCCCA CTTGGCAGTA CATCAAGTGT ATCATATGCC AAGTCCGCCC CCTATTGACG TCAATGACGG TAAATGGCCC
TTTGACGGGT GAACCGTCAT GTAGTTCACA TAGTATACGG TTCAGGCGGG GGATAACTGC AGTTACTGCC ATTTACCGGG

721 GCCTGGCATT ATGCCCAGTA CATGACCTTA CGGGACTTTC CTACTTGGCA GTACATCTAC GTATTAGTCA TCGCTATTAC
CGGACCGTAA TACGGGTCAT GTACTGGAAT GCCCTGAAAG GATGAACCGT CATGTAGATG CATAATCAGT AGCGATAATG

801 CATGGTGATG CGGTTTTGGC AGTACACCAA TGGGCGTGGA TAGCGGTTTG ACTCACGGGG ATTTCCAAGT CTCCACCCCA
GTACCACTAC GCCAAAACCG TCATGTGGTT ACCCGCACCT ATCGCCAAAC TGAGTGCCCC TAAAGGTTCA GAGGTGGGGT

881 TTGACGTCAA TGGGAGTTTG TTTTGGCACC AAAATCAACG GGACTTTCCA AAATGTCGTA ATAACCCCGC CCCGTTGACG
AACTGCAGTT ACCCTCAAAC AAAACCGTGG TTTTAGTTGC CCTGAAAGGT TTTACAGCAT TATTGGGGCG GGGCAACTGC

961 CAAATGGGCG GTAGGCGTGT ACGGTGGGAG GTCTATATAA GCAGAGCTCG TTTAGTGAAC CGTCAGATCG CCTGGAGACG
GTTTACCCGC CATCCGCACA TGCCACCCTC CAGATATATT CGTCTCGAGC AAATCACTTG GCAGTCTAGC GGACCTCTGC

1041 CCATCCACGC TGTTTTGACC TCCATAGAAG ACACCGGGAC CGATCCAGCC TCCGCGGCCG GGAACGGTGC ATTGGAACGC
GGTAGGTGCG ACAAAACTGG AGGTATCTTC TGTGGCCCTG GCTAGGTCGG AGGCGCCGGC CCTTGCCACG TAACCTTGCG

1121 GGATTCCCCG TGCCAAGAGT GACGTAAGTA CCGCCTATAG ACTCTATAGG CACACCCCTT TGGCTCTTAT GCATGCTATA
CCTAAGGGGC ACGGTTCTCA CTGCATTCAT GGCGGATATC TGAGATATCC GTGTGGGGAA ACCGAGAATA CGTACGATAT

1201 CTGTTTTTGG CTTGGGGCCT ATACACCCCC GCTCCTTATG CTATAGGTGA TGGTATAGCT TAGCCTATAG GTGTGGGTTA
GACAAAAAAC GAACCCCGGA TATGTGGGGG CGAGGAATAC GATATCCACT ACCATATCGA ATCGGATATC CACACCCAAT

1281 TTGACCATTA TTGACCACTC CCCTATTGGT GACGATACTT TCCATTACTA ATCCATAACA TGGCTCTTTG CCACAACTAT
AACTGGTAAT AACTGGTGAG GGGATAACCA CTGCTATGAA AGGTAATGAT TAGGTATTGT ACCGAGAAAC GGTGTTGATA

FIG. 5-2

OIPE
DEC 02 2002
PATENT & TRADEMARK OFFICE
1613

pCMV-delNS35

```
1361  CTCTATTGGC TATATGCCAA TACTCTGTCC TTCAGAGACT GACACGGACT CTGTATTTTT ACAGGATGGG GTCCATTTAT
      GAGATAACCG ATATACGGTT ATGAGACAGG AAGTCTCTGA CTGTGCCTGA GACATAAAAA TGTCCTACCC CAGGTAAATA

1441  TATTTACAAA TTCACATATA CAACAACGCC GTCCCCCGTG CCCGCAGTTT TTATTAAACA TAGCGTGGGA TCTCCGACAT
      ATAAATGTTT AAGTGTATAT GTTGTTGCGG CAGGGGGCAC GGGCGTCAAA AATAATTTGT ATCGCACCCT AGAGGCTGTA

1521  CTCGGGTACG TGTTCCGGAC ATGGGCTCTT CTCCGGTAGC GGCGGAGCTT CCACATCCGA GCCCTGGTCC CATCCGTCCA
      GAGCCCATGC ACAAGGCCTG TACCCGAGAA GAGGCCATCG CCGCCTCGAA GGTGTAGGCT CGGGACCAGG GTAGGCAGGT

1601  GCGGCTCATG GTCGCTCGGC AGCTCCTTGC TCCTAACAGT GGAGGCCAGA CTTAGGCACA GCACAATGCC CACCACCACC
      CGCCGAGTAC CAGCGAGCCG TCGAGGAACG AGGATTGTCA CCTCCGGTCT GAATCCGTGT CGTGTTACGG GTGGTGGTGG

1681  AGTGTGCCGC ACAAGGCCGT GGCGGTAGGG TATGTGTCTG AAAATGAGCT CGGAGATTGG GCTCGCACCT GGACGCAGAT
      TCACACGGCG TGTTCCGGCA CCGCCATCCC ATACACAGAC TTTTACTCGA GCCTCTAACC CGAGCGTGGA CCTGCGTCTA

1761  GGAAGACTTA AGGCAGCGGC AGAAGAAGAT GCAGGCAGCT GAGTTGTTGT ATTCTGATAA GAGTCAGAGG TAACTCCCGT
      CCTTCTGAAT TCCGTCGCCG TCTTCTTCTA CGTCCGTCGA CTCAACAACA TAAGACTATT CTCAGTCTCC ATTGAGGGCA

1841  TGCGGTGCTG TTAACGGTGG AGGGCAGTGT AGTCTGAGCA GTACTCGTTG CTGCCGCGCG CGCCACCAGA CATAATAGCT
      ACGCCACGAC AATTGCCACC TCCCGTCACA TCAGACTCGT CATGAGCAAC GACGGCGCGC GCGGTGGTCT GTATTATCGA

   +2                                                                          M  A  A
                                                                    EcoRI
                                                                    ------
1921  GACAGACTAA CAGACTGTTC CTTTCCATGG GTCTTTTCTG CAGTCACCGT CGTCGACCTA AGAATTCACC ATGGCTGCAT
      CTGTCTGATT GTCTGACAAG GAAAGGTACC CAGAAAAGAC GTCAGTGGCA GCAGCTGGAT TCTTAAGTGG TACCGACGTA
```

FIG. 5-3

OIPE
DEC 02 2002
PATENT & TRADEMARK OFFICE
JC13

pCMV-delNS35

```
   +2 Y  A  A  Q  G  Y  K  V  L  V  L  N  P  S  V  A  A  T  L  G  F  G  A  Y  M  S  K
2001  ATGCAGCTCA GGGCTATAAG GTGCTAGTAC TCAACCCCTC TGTTGCTGCA ACACTGGGCT TTGGTGCTTA CATGTCCAAG
      TACGTCGAGT CCCGATATTC CACGATCATG AGTTGGGGAG ACAACGACGT TGTGACCCGA AACCACGAAT GTACAGGTTC

   +2  A  H  G  I  D  P  N  I  R  T  G  V  R  T  I  T  T  G  S  P  I  T  Y  S  T  Y  G
2081  GCTCATGGGA TCGATCCTAA CATCAGGACC GGGGTGAGAA CAATTACCAC TGGCAGCCCC ATCACGTACT CCACCTACGG
      CGAGTACCCT AGCTAGGATT GTAGTCCTGG CCCCACTCTT GTTAATGGTG ACCGTCGGGG TAGTGCATGA GGTGGATGCC

   +2  K  F  L  A  D  G  G  C  S  G  G  A  Y  D  I  I  I  C  D  E  C  H  S  T  D  A
2161  CAAGTTCCTT GCCGACGGCG GGTGCTCGGG GGGCGCTTAT GACATAATAA TTTGTGACGA GTGCCACTCC ACGGATGCCA
      GTTCAAGGAA CGGCTGCCGC CCACGAGCCC CCCGCGAATA CTGTATTATT AAACACTGCT CACGGTGAGG TGCCTACGGT

   +2 T  S  I  L  G  I  G  T  V  L  D  Q  A  E  T  A  G  A  R  L  V  V  L  A  T  A  T
2241  CATCCATCTT GGGCATTGGC ACTGTCCTTG ACCAAGCAGA GACTGCGGGG GCGAGACTGG TTGTGCTCGC CACCGCCACC
      GTAGGTAGAA CCCGTAACCG TGACAGGAAC TGGTTCGTCT CTGACGCCCC CGCTCTGACC AACACGAGCG GTGGCGGTGG

   +2  P  P  G  S  V  T  V  P  H  P  N  I  E  E  V  A  L  S  T  T  G  E  I  P  F  Y  G
2321  CCTCCGGGCT CCGTCACTGT GCCCCATCCC AACATCGAGG AGGTTGCTCT GTCCACCACC GGAGAGATCC CTTTTTACGG
      GGAGGCCCGA GGCAGTGACA CGGGGTAGGG TTGTAGCTCC TCCAACGAGA CAGGTGGTGG CCTCTCTAGG GAAAAATGCC

   +2  K  A  I  P  L  E  V  I  K  G  G  R  H  L  I  F  C  H  S  K  K  K  C  D  E  L
2401  CAAGGCTATC CCCCTCGAAG TAATCAAGGG GGGGAGACAT CTCATCTTCT GTCATTCAAA GAAGAAGTGC GACGAACTCG
      GTTCCGATAG GGGGAGCTTC ATTAGTTCCC CCCCTCTGTA GAGTAGAAGA CAGTAAGTTT CTTCTTCACG CTGCTTGAGC

   +2 A  A  K  L  V  A  L  G  I  N  A  V  A  Y  Y  R  G  L  D  V  S  V  I  P  T  S  G
2481  CCGCAAAGCT GGTCGCATTG GGCATCAATG CCGTGGCCTA CTACCGCGGT CTTGACGTGT CCGTCATCCC GACCAGCGGC
      GGCGTTTCGA CCAGCGTAAC CCGTAGTTAC GGCACCGGAT GATGGCGCCA GAACTGCACA GGCAGTAGGG CTGGTCGCCG
```

FIG. 5-4

OIPE
DEC 02 2002
PATENT & TRADEMARK OFFICE
1613

pCMV-delNS35

```
   +2  D  V  V  V   V  A  T   D  A  L   M  T  G  Y   T  G  D   F  D  S   V  I  D  C   N  T  C
2561  GATGTTGTCG TCGTGGCAAC CGATGCCCTC ATGACCGGCT ATACCGGCGA CTTCGACTCG GTGATAGACT GCAATACGTG
      CTACAACAGC AGCACCGTTG GCTACGGGAG TACTGGCCGA TATGGCCGCT GAAGCTGAGC CACTATCTGA CGTTATGCAC

   +2   V  T  Q   T  V  D  F   S  L  D   P  T  F   T  I  E  T   I  T  L   P  Q  D   A  V  S
2641  TGTCACCCAG ACAGTCGATT TCAGCCTTGA CCCTACCTTC ACCATTGAGA CAATCACGCT CCCCCAAGAT GCTGTCTCCC
      ACAGTGGGTC TGTCAGCTAA AGTCGGAACT GGGATGGAAG TGGTAACTCT GTTAGTGCGA GGGGGTTCTA CGACAGAGGG

   +2  R  T  Q  R   R  G  R   T  G  R  G   K  P  G   I  Y  R   F  V  A  P   G  E  R   P  S  G
2721  GCACTCAACG TCGGGGCAGG ACTGGCAGGG GGAAGCCAGG CATCTACAGA TTTGTGGCAC CGGGGGAGCG CCCCTCCGGC
      CGTGAGTTGC AGCCCCGTCC TGACCGTCCC CCTTCGGTCC GTAGATGTCT AAACACCGTG GCCCCCTCGC GGGGAGGCCG

   +2  M  F  D  S   S  V  L   C  E  C   Y  D  A  G   C  A  W   Y  E  L   T  P  A  E   T  T  V
2801  ATGTTCGACT CGTCCGTCCT CTGTGAGTGC TATGACGCAG GCTCTGCTTG GTATGAGCTC ACGCCCGCCG AGACTACAGT
      TACAAGCTGA GCAGGCAGGA GACACTCACG ATACTGCGTC CGACACGAAC CATACTCGAG TGCGGGCGGC TCTGATGTCA

   +2   R  L  R   A  Y  M  N   T  P  G   L  P  V   C  Q  D  H   L  E  F   W  E  G   V  F  T
                                                                                    StuI
                                                                                    --
2881  TAGGCTACGA GCGTACATGA ACACCCCGGG GCTTCCCGTG TGCCAGGACC ATCTTGAATT TTGGGAGGGC GTCTTTACAG
      ATCCGATGCT CGCATGTACT TGTGGGGCCC CGAAGGGCAC ACGGTCCTGG TAGAACTTAA AACCCTCCCG CAGAAATGTC

   +2  G  L  T  H   I  D  A   H  F  L  S   Q  T  K   Q  S  G   E  N  L  P   Y  L  V   A  Y  Q
       StuI
       ----
2961  GCCTCACTCA TATAGATGCC CACTTTCTAT CCCAGACAAA GCAGAGTGGG GAGAACCTTC CTTACCTGGT AGCGTACCAA
      CGGAGTGAGT ATATCTACGG GTGAAAGATA GGGTCTGTTT CGTCTCACCC CTCTTGGAAG GAATGGACCA TCGCATGGTT
```

FIG. 5-5

OIPE
DEC 0 2 2002
PATENT & TRADEMARK OFFICE
1C13

pCMV-delNS35

```
   +2  A  T  V  C   A  R  A   Q  A  P   P  P  S  W   D  Q  M   W  K  C   L  I  R  L   K  P  T
3041  GCCACCGTGT GCGCTAGGGC TCAAGCCCCT CCCCCATCGT GGGACCAGAT GTGGAAGTGT TTGATTCGCC TCAAGCCCAC
      CGGTGGCACA CGCGATCCCG AGTTCGGGGA GGGGGTAGCA CCCTGGTCTA CACCTTCACA AACTAAGCGG AGTTCGGGTG

   +2  L  H  G   P  T  P  L   L  Y  R   L  G  A   V  Q  N  E   I  T  L   T  H  P   V  T  K
3121  CCTCCATGGG CCAACACCCC TGCTATACAG ACTGGGCGCT GTTCAGAATG AAATCACCCT GACGCACCCA GTCACCAAAT
      GGAGGTACCC GGTTGTGGGG ACGATATGTC TGACCCGCGA CAAGTCTTAC TTTAGTGGGA CTGCGTGGGT CAGTGGTTTA

   +2  Y  I  M  T   C  M  S   A  D  L  E   V  V  T   S  T  W   V  L  V  G   G  V  L   A  A  L
3201  ACATCATGAC ATGCATGTCG GCCGACCTGG AGGTCGTCAC GAGCACCTGG GTGCTCGTTG GCGGCGTCCT GGCTGCTTTG
      TGTAGTACTG TACGTACAGC CGGCTGGACC TCCAGCAGTG CTCGTGGACC CACGAGCAAC CGCCGCAGGA CCGACGAAAC

   +2  A  A  Y  C   L  S  T   G  C  V   V  I  V  G   R  V  V   L  S  G   K  P  A  I   I  P  D
3281  GCCGCGTATT GCCTGTCAAC AGGCTGCGTG GTCATAGTGG GCAGGGTCGT CTTGTCCGGG AAGCCGGCAA TCATACCTGA
      CGGCGCATAA CGGACAGTTG TCCGACGCAC CAGTATCACC CGTCCCAGCA GAACAGGCCC TTCGGCCGTT AGTATGGACT

   +2  R  E  V   L  Y  R  E   F  D  E   M  E  E   C  S  Q  H   L  P  Y   I  E  Q   G  M  M
3361  CAGGGAAGTC CTCTACCGAG AGTTCGATGA GATGGAAGAG TGCTCTCAGC ACTTACCGTA CATCGAGCAA GGGATGATGC
      GTCCCTTCAG GAGATGGCTC TCAAGCTACT CTACCTTCTC ACGAGAGTCG TGAATGGCAT GTAGCTCGTT CCCTACTACG

   +2  L  A  E  Q   F  K  Q   K  A  L  G   L  L  Q   T  A  S   R  Q  A  E   V  I  A   P  A  V
3441  TCGCCGAGCA GTTCAAGCAG AAGGCCCTCG GCCTCCTGCA GACCGCGTCC CGTCAGGCAG AGGTTATCGC CCCTGCTGTC
      AGCGGCTCGT CAAGTTCGTC TTCCGGGAGC CGGAGGACGT CTGGCGCAGG GCAGTCCGTC TCCAATAGCG GGGACGACAG

   +2  Q  T  N  W   Q  K  L   E  T  F   W  A  K  H   M  W  N   F  I  S   G  I  Q  Y   L  A  G
3521  CAGACCAACT GGCAAAAACT CGAGACCTTC TGGGCGAAGC ATATGTGGAA CTTCATCAGT GGGATACAAT ACTTGGCGGG
      GTCTGGTTGA CCGTTTTTGA GCTCTGGAAG ACCCGCTTCG TATACACCTT GAAGTAGTCA CCCTATGTTA TGAACCGCCC
```

FIG. 5-6

PATENT & TRADEMARK OFFICE
OIPE
DEC 02 2002
JC13

pCMV-delNS35

```
   +2   L  S  T  L  P  G  N  P  A  I  A  S  L  M  A  F  T  A  A  V  T  S  P  L  T  T
3601  CTTGTCAACG CTGCCTGGTA ACCCCGCCAT TGCTTCATTG ATGGCTTTTA CAGCTGCTGT CACCAGCCCA CTAACCACTA
      GAACAGTTGC GACGGACCAT TGGGGCGGTA ACGAAGTAAC TACCGAAAAT GTCGACGACA GTGGTCGGGT GATTGGTGAT

   +2  S  Q  T  L  L  F  N  I  L  G  G  W  V  A  A  Q  L  A  A  P  G  A  A  T  A  F  V
3681  GCCAAACCCT CCTCTTCAAC ATATTGGGGG GGTGGGTGGC TGCCCAGCTC GCCGCCCCCG GTCCCGCTAC TGCCTTTGTG
      CGGTTTGGGA GGAGAAGTTG TATAACCCCC CCACCCACCG ACGGGTCGAG CGGCGGGGGC CACGGCGATG ACGGAAACAC

   +2  G  A  G  L  A  G  A  A  I  G  S  V  G  L  G  K  V  L  I  D  I  L  A  G  Y  G  A
3761  GGCGCTGGCT TAGCTGGCGC CGCCATCGGC AGTGTTGGAC TGGGGAAGGT CCTCATAGAC ATCCTTGCAG GGTATGGCGC
      CCGCGACCGA ATCGACCGCG GCGGTAGCCG TCACAACCTG ACCCCTTCCA GGAGTATCTG TAGGAACGTC CCATACCGCG

   +2   G  V  A  G  A  L  V  A  F  K  I  M  S  G  E  V  P  S  T  E  D  L  V  N  L  L
3841  GGGCGTGGCG GGAGCTCTTG TGGCATTCAA GATCATGAGC GGTGAGGTCC CCTCCACGGA GGACCTGGTC AATCTACTGC
      CCCGCACCGC CCTCGAGAAC ACCGTAAGTT CTAGTACTCG CCACTCCAGG GGAGGTGCCT CCTGGACCAG TTAGATGACG

   +2  P  A  I  L  S  P  G  A  L  V  V  G  V  V  C  A  A  I  L  R  R  H  V  G  P  G  E
3921  CCGCCATCCT CTCGCCCGGA GCCCTCGTAG TCGGCGTGGT CTGTGCAGCA ATACTGCGCC GGCACGTTGG CCCGGGCGAG
      GGCGGTAGGA GAGCGGGCCT CGGGAGCATC AGCCGCACCA GACACGTCGT TATGACGCGG CCGTGCAACC GGGCCCGCTC

   +2  G  A  V  Q  W  M  N  R  L  I  A  F  A  S  R  G  N  H  V  S  P  T  H  Y  V  P  E
4001  GGGGCAGTGC AGTGGATGAA CCGGCTGATA GCCTTCGCCT CCCGGGGGAA CCATGTTTCC CCCACGCACT ACGTGCCGGA
      CCCCGTCACG TCACCTACTT GGCCGACTAT CGGAAGCGGA GGGCCCCCTT GGTACAAAGG GGGTGCGTGA TGCACGGCCT

   +2   S  D  A  A  A  R  V  T  A  I  L  S  S  L  T  V  T  Q  L  L  R  R  L  H  Q  W
4081  GAGCGATGCA GCTGCCCGCG TCACTGCCAT ACTCAGCAGC CTCACTGTAA CCCAGCTCCT GAGGCGACTG CACCAGTGGA
      CTCGCTACGT CGACGGGCGC AGTGACGGTA TGAGTCGTCG GAGTGACATT GGGTCGAGGA CTCCGCTGAC GTGGTCACCT
```

FIG. 5-7

OIPE
DEC 0 2 2002
PATENT & TRADEMARK OFFICE
JC13

pCMV-delNS35

```
   +2 I  S  S  E  C  T  T  P  C  S  G  S  W  L  R  D  I  W  D  W  I  C  E  V  L  S  D
4161  TAAGCTCGGA GTGTACCACT CCATGCTCCG GTTCCTGGCT AAGGGACATC TGGGACTGGA TATGCGAGGT GTTGAGCGAC
      ATTCGAGCCT CACATGGTGA GGTACGAGGC CAAGGACCGA TTCCCTGTAG ACCCTGACCT ATACGCTCCA CAACTCGCTG

   +2  F  K  T  W  L  K  A  K  L  M  P  Q  L  P  G  I  P  F  V  S  C  Q  R  G  Y  K  G
                                                    BamHI
                                                    ------
4241  TTTAAGACCT GGCTAAAAGC TAAGCTCATG CCACAGCTGC CTGGGATCCC CTTTGTGTCC TGCCAGCGCG GGTATAAGGG
      AAATTCTGGA CCGATTTTCG ATTCGAGTAC GGTGTCGACG GACCCTAGGG GAAACACAGG ACGGTCGCGC CCATATTCCC

   +2   V  W  R  G  D  G  I  M  H  T  R  C  H  C  G  A  E  I  T  G  H  V  K  N  G  T
4321  GGTCTGGCGA GGGGACGGCA TCATGCACAC TCGCTGCCAC TGTGGAGCTG AGATCACTGG ACATGTCAAA AACGGGACGA
      CCAGACCGCT CCCCTGCCGT AGTACGTGTG AGCGACGGTG ACACCTCGAC TCTAGTGACC TGTACAGTTT TTGCCCTGCT

   +2 M  R  I  V  G  P  R  T  C  R  N  M  W  S  G  T  F  P  I  N  A  Y  T  T  G  P  C
4401  TCAGGATCGT CGGTCCTAGG ACCTGCAGGA ACATGTGGAG TGGGACCTTC CCCATTAATG CCTACACCAC GGGCCCCTGT
      ACTCCTAGCA GCCAGGATCC TGGACGTCCT TGTACACCTC ACCCTGGAAG GGGTAATTAC GGATGTGGTG CCCGGGGACA

   +2  T  P  L  P  A  P  N  Y  T  F  A  L  W  R  V  S  A  E  E  Y  V  E  I  R  Q  V  G
4481  ACCCCCCTTC CTGCGCCGAA CTACACGTTC GCGCTATGGA GGGTGTCTGC AGAGGAATAC GTGGAGATAA GGCAGGTGGG
      TGGGGGGAAG GACGCGGCTT GATGTGCAAG CGCGATACCT CCCACAGACG TCTCCTTATG CACCTCTATT CCGTCCACCC

   +2   D  F  H  Y  V  T  G  M  T  T  D  N  L  K  C  P  C  Q  V  P  S  P  E  F  F  T
4561  GGACTTCCAC TACGTGACGG GTATGACTAC TGACAATCTT AAATGCCCGT GCCAGGTCCC ATCGCCCGAA TTTTTCACAG
      CCTGAAGGTG ATGCACTGCC CATACTGATG ACTGTTAGAA TTTACGGGCA CGGTCCAGGG TAGCGGGCTT AAAAAGTGTC

   +2 E  L  D  G  V  R  L  H  R  F  A  P  P  C  K  P  L  L  R  E  E  V  S  F  R  V  G
4641  AATTGGACGG GGTGCGCCTA CATAGGTTTG CGCCCCCCTG CAAGCCCTTG CTGCGGGAGG AGGTATCATT CAGAGTAGGA
      TTAACCTGCC CCACGCGGAT GTATCCAAAC GCGGGGGGAC GTTCGGGAAC GACGCCCTCC TCCATAGTAA GTCTCATCCT
```

FIG. 5-8

OIPE
DEC 02 2002
PATENT & TRADEMARK OFFICE
JC13

pCMV-delNS35

```
   +2  L  H  E  Y  P  V  G  S  Q  L  P  C  E  P  E  P  D  V  A  V  L  T  S  M  L  T  D
4721  CTCCACGAAT ACCCGGTAGG GTCGCAATTA CCTTGCGAGC CCGAACCGGA CGTGGCCGTG TTGACGTCCA TGCTCACTGA
      GAGGTGCTTA TGGGCCATCC CAGCGTTAAT GGAACGCTCG GGCTTGGCCT GCACCGGCAC AACTGCAGGT ACGAGTGACT

   +2  P  S  H  I  T  A  E  A  A  G  R  R  L  A  R  G  S  P  P  S  V  A  S  S  S  A
4801  TCCCTCCCAT ATAACAGCAG AGGCGGCCGG GCGAAGGTTG GCGAGGGGAT CACCCCCCTC TGTGGCCAGC TCCTCGGCTA
      AGGGAGGGTA TATTGTCGTC TCCGCCGGCC CGCTTCCAAC CGCTCCCCTA GTGGGGGGAG ACACCGGTCG AGGAGCCGAT

   +2  S  Q  L  S  A  P  S  L  K  A  T  C  T  A  N  H  D  S  P  D  A  E  L  I  E  A  N
4881  GCCAGCTATC CGCTCCATCT CTCAAGGCAA CTTGCACCGC TAACCATGAC TCCCCTGATG CTGAGCTCAT AGAGGCCAAC
      CGGTCGATAG GCGAGGTAGA GAGTTCCGTT GAACGTGGCG ATTGGTACTG AGGGGACTAC GACTCGAGTA TCTCCGGTTG

   +2  L  L  W  R  Q  E  M  G  G  N  I  T  R  V  E  S  E  N  K  V  V  I  L  D  S  F  D
4961  CTCCTATGGA GGCAGGAGAT GGGCGGCAAC ATCACCAGGG TTGAGTCAGA AAACAAAGTG GTGATTCTGG ACTCCTTCGA
      GAGGATACCT CCGTCCTCTA CCCGCCGTTG TAGTGGTCCC AACTCAGTCT TTTGTTTCAC CACTAAGACC TGAGGAAGCT

   +2  P  L  V  A  E  E  D  E  R  E  I  S  V  P  A  E  I  L  R  K  S  R  R  F  A  Q
5041  TCCGCTTGTG GCGGAGGAGG ACGAGCGGGA GATCTCCGTA CCCGCAGAAA TCCTGCGGAA GTCTCGGAGA TTCGCCCAGG
      AGGCGAACAC CGCCTCCTCC TGCTCGCCCT CTAGAGGCAT GGGCGTCTTT AGGACGCCTT CAGAGCCTCT AAGCGGGTCC

   +2  A  L  P  V  W  A  R  P  D  Y  N  P  P  L  V  E  T  W  K  K  P  D  Y  E  P  P  V
5121  CCCTGCCCGT TTGGGCGCGG CCGGACTATA ACCCCCCGCT AGTGGAGACG TGGAAAAAGC CCGACTACGA ACCACCTGTG
      GGGACGGGCA AACCCGCGCC GGCCTGATAT TGGGGGGCGA TCACCTCTGC ACCTTTTTCG GGCTGATGCT TGGTGGACAC

   +2  V  H  G  C  P  L  P  P  P  K  S  P  P  V  P  P  P  R  K  K  R  T  V  V  L  T  E
5201  GTCCATGGCT GCCCGCTTCC ACCTCCAAAG TCCCCTCCTG TGCCTCCGCC TCGGAAGAAG CGGACGGTGG TCCTCACTGA
      CAGGTACCGA CGGGCGAAGG TGGAGGTTTC AGGGGAGGAC ACGGAGGCGG AGCCTTCTTC GCCTGCCACC AGGAGTGACT
```

FIG. 5-9

PATENT & TRADEMARK OFFICE
DEC 0 2 2002
OIPE
JC13

pCMV-delNS35

```
   +2   S  T  L   S  T  A  L   A  E  L   A  T  R   S  F  G  S   S  S  T   S  G  I   T  G  D
5281  ATCAACCCTA TCTACTGCCT TGGCCGAGCT CGCCACCAGA AGCTTTGGCA GCTCCTCAAC TTCCGGCATT ACGGCGGACA
      TAGTTGGGAT AGATGACGGA ACCGGCTCGA GCGGTGGTCT TCGAAACCGT CGAGGAGTTG AAGGCCGTAA TGCCCGCTGT

   +2 N  T  T  T   S  S  E   P  A  P  S   G  C  P   P  D  S   D  A  E  S   Y  S  S   M  P  P
5361  ATACGACAAC ATCCTCTGAG CCCGCCCCTT CTGGCTGCCC CCCCGACTCC GACGCTGAGT CCTATTCCTC CATGCCCCCC
      TATGCTGTTG TAGGAGACTC GGGCGGGGAA GACCGACGGG GGGGCTGAGG CTGCGACTCA GGATAAGGAG GTACGGGGGG

   +2  L  E  G  E   P  G  D   P  D  L   S  D  G  S   W  S  T   V  S  S   E  A  N  A   E  D  V
                              BamHI
                              -------
5441  CTGGAGGGGG AGCCTGGGGA TCCGGATCTT AGCGACGGGT CATGGTCAAC GGTCAGTAGT GAGGCCAACG CGGAGGATGT
      GACCTCCCCC TCGGACCCCT AGGCCTAGAA TCGCTGCCCA GTACCAGTTG CCAGTCATCA CTCCGGTTGC GCCTCCTACA

   +2   V  C  C   S  M  S  Y   S  W  T   G  A  L   V  T  P  C   A  A  E   E  Q  K   L  P  I
5521  CGTGTGCTGC TCAATGTCTT ACTCTTGGAC AGGCGCACTC GTCACCCCGT GCGCCGCGGA AGAACAGAAA CTGCCCATCA
      GCACACGACG AGTTACAGAA TGAGAACCTG TCCGCGTGAG CAGTGGGGCA CGCGGCGCCT TCTTGTCTTT GACGGGTAGT

   +2 N  A  L  S   N  S  L   L  R  H  H   N  L  V   Y  S  T   T  S  R  S   A  C  Q   R  Q  K
5601  ATGCACTAAG CAACTCGTTG CTACGTCACC ACAATTTGGT GTATTCCACC ACCTCACGCA GTGCTTGCCA AAGGCAGAAG
      TACGTGATTC GTTGAGCAAC GATGCAGTGG TGTTAAACCA CATAAGGTGG TGGAGTGCGT CACGAACGGT TTCCGTCTTC

   +2  K  V  T  F   D  R  L   Q  V  L   D  S  H  Y   Q  D  V   L  K  E   V  K  A  A   A  S  K
5681  AAAGTCACAT TTGACAGACT GCAAGTTCTG GACAGCCATT ACCAGGACGT ACTCAAGGAG GTTAAAGCAG CGGCGTCAAA
      TTTCAGTGTA AACTGTCTGA CGTTCAAGAC CTGTCGGTAA TGGTCCTGCA TGAGTTCCTC CAATTTCGTC GCCGCAGTTT

   +2   V  K  A   N  L  L  S   V  E  E   A  C  S   L  T  P  P   H  S  A   K  S  K   F  G  Y
5761  AGTGAAGGCT AACTTGCTAT CCGTAGAGGA AGCTTGCAGC CTGACGCCCC CACACTCAGC CAAATCCAAG TTTGGTTATG
      TCACTTCCGA TTGAACGATA GGCATCTCCT TCGAACGTCG GACTGCGGGG GTGTGAGTCG GTTTAGGTTC AAACCAATAC
```

FIG. 5-10

OIPE
DEC 02 2002
TRADEMARK OFFICE
JC43

pCMV-delNS35

```
   +2 G  A  K  D   V  R  C   H  A  R  K   A  V  T   H  I  N   S  V  W  K   D  L  L   E  D  N
5841  GGGCAAAAGA CGTCCGTTGC CATGCCAGAA AGGCCGTAAC CCACATCAAC TCCGTGTGGA AAGACCTTCT GGAAGACAAT
      CCCGTTTTCT GCAGGCAACG GTACGGTCTT TCCGGCATTG GGTGTAGTTG AGGCACACCT TTCTGGAAGA CCTTCTGTTA

   +2  V  T  P  I   D  T  T   I  M  A   K  N  E  V   F  C  V   Q  P  E   K  G  G  R   K  P  A
5921  GTAACACCAA TAGACACTAC CATCATGGCT AAGAACGAGG TTTTCTGCGT TCAGCCTGAG AAGGGGGGTC GTAAGCCAGC
      CATTGTGGTT ATCTGTGATG GTAGTACCGA TTCTTGCTCC AAAAGACGCA AGTCGGACTC TTCCCCCCAG CATTCGGTCG

   +2   R  L  I   V  F  P  D   L  G  V   R  V  C   E  K  M  A   L  Y  D   V  V  T   K  L  P
6001  TCGTCTCATC GTGTTCCCCG ATCTGGGCGT GCGCGTGTGC GAAAAGATGG CTTTGTACGA CGTGGTTACA AAGCTCCCCT
      AGCAGAGTAG CACAAGGGGC TAGACCCGCA CGCGCACACG CTTTTCTACC GAAACATGCT GCACCAATGT TTCGAGGGGA

   +2 L  A  V  M   G  S  S   Y  G  F  Q   Y  S  P   G  Q  R   V  E  F  L   V  Q  A   W  K  S
                                                              EcoRI
                                                              -------
6081  TGGCCGTGAT GGGAAGCTCC TACGGATTCC AATACTCACC AGGACAGCGG GTTGAATTCC TCGTGCAAGC GTGGAAGTCC
      ACCGGCACTA CCCTTCGAGG ATGCCTAAGG TTATGAGTGG TCCTGTCGCC CAACTTAAGG AGCACGTTCG CACCTTCAGG

   +2  K  K  T  P   M  G  F   S  Y  D   T  R  C  F   D  S  T   V  T  E   S  D  I  R   T  E  E
6161  AAGAAAACCC CAATGGGGTT CTCGTATGAT ACCCGCTGCT TTGACTCCAC AGTCACTGAG AGCGACATCC GTACGGAGGA
      TTCTTTTGGG GTTACCCCAA GAGCATACTA TGGGCGACGA AACTGAGGTG TCAGTGACTC TCGCTGTAGG CATGCCTCCT

   +2   A  I  Y   Q  C  C  D   L  D  P   Q  A  R   V  A  I  K   S  L  T   E  R  L   Y  V  G
6241  GGCAATCTAC CAATGTTGTG ACCTCGACCC CCAAGCCCGC GTGGCCATCA AGTCCCTCAC CGAGAGGCTT TATGTTGGGG
      CCGTTAGATG GTTACAACAC TGGAGCTGGG GGTTCGGGCG CACCGGTAGT TCAGGGAGTG GCTCTCCGAA ATACAACCCC

   +2 G  P  L  T   N  S  R   G  E  N  C   G  Y  R   R  C  R   A  S  G  V   L  T  T   S  C  G
6321  GCCCTCTTAC CAATTCAAGG GGGGAGAACT GCGGCTATCG CAGGTGCCGC GCGAGCGGCG TACTGACAAC TAGCTGTGGT
      CGGGAGAATG GTTAAGTTCC CCCCTCTTGA CGCCGATAGC GTCCACGGCG CGCTCGCCGC ATGACTGTTG ATCGACACCA
```

FIG. 5-11

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE
1613

pCMV-delNS35

```
   +2  N  T  L  T  C  Y  I  K  A  R  A  A  C  R  A  A  G  L  Q  D  C  T  M  L  V  C  G
6401  AACACCCTCA CTTGCTACAT CAAGGCCCGG GCAGCCTGTC GAGCCGCAGG GCTCCAGGAC TGCACCATGC TCGTGTGTGG
      TTGTGGGAGT GAACGATGTA GTTCCGGGCC CGTCGGACAG CTCGGCGTCC CGAGGTCCTG ACGTGGTACG AGCACACACC

   +2  D  D  L  V  V  I  C  E  S  A  G  V  Q  E  D  A  A  S  L  R  A  F  T  E  A  M
6481  CGACGACTTA GTCGTTATCT GTGAAAGCGC GGGGGTCCAG GAGGACGCGG CGAGCCTGAG AGCCTTCACG GAGGCTATGA
      GCTGCTGAAT CAGCAATAGA CACTTTCGCG CCCCCAGGTC CTCCTGCGCC GCTCGGACTC TCGGAAGTGC CTCCGATACT

   +2  T  R  Y  S  A  P  P  G  D  P  P  Q  P  E  Y  D  L  E  L  I  T  S  C  S  S  N  V
6561  CCAGGTACTC CGCCCCCCCT GGGGACCCCC CACAACCAGA ATACGACTTG GAGCTCATAA CATCATGCTC CTCCAACGTG
      GGTCCATGAG GCGGGGGGGA CCCCTGGGGG GTGTTGGTCT TATGCTGAAC CTCGAGTATT GTAGTACGAG GAGGTTGCAC

   +2  S  V  A  H  D  G  A  G  K  R  V  Y  Y  L  T  R  D  P  T  T  P  L  A  R  A  A  W
6641  TCAGTCGCCC ACGACGGCGC TGGAAAGAGG GTCTACTACC TCACCCGTGA CCCTACAACC CCCCTCGCGA GAGCTGCGTG
      AGTCAGCGGG TGCTGCCGCG ACCTTTCTCC CAGATGATGG AGTGGGCACT GGGATGTTGG GGGGAGCGCT CTCGACGCAC

   +2  E  T  A  R  H  T  P  V  N  S  W  L  G  N  I  I  M  F  A  P  T  L  W  A  R  M
6721  GGAGACAGCA AGACACACTC CAGTCAATTC CTGGCTAGGC AACATAATCA TGTTTGCCCC CACACTGTGG GCGAGGATGA
      CCTCTGTCGT TCTGTGTGAG GTCAGTTAAG GACCGATCCG TTGTATTAGT ACAAACGGGG GTGTGACACC CGCTCCTACT

   +2  I  L  M  T  H  F  F  S  V  L  I  A  R  D  Q  L  E  Q  A  L  D  C  E  I  Y  G  A
6801  TACTGATGAC CCATTTCTTT AGCGTCCTTA TAGCCAGGGA CCAGCTTGAA CAGGCCCTCG ATTGCGAGAT CTACGGGGCC
      ATGACTACTG GGTAAAGAAA TCGCAGGAAT ATCGGTCCCT GGTCGAACTT GTCCGGGAGC TAACGCTCTA GATGCCCCGG

   +2  C  Y  S  I  E  P  L  D  L  P  P  I  I  Q  R  L  H  G  L  S  A  F  S  L  H  S  Y
6881  TGCTACTCCA TAGAACCACT GGATCTACCT CCAATCATTC AAAGACTCCA TGGCCTCAGC GCATTTTCAC TCCACAGTTA
      ACGATGAGGT ATCTTGGTGA CCTAGATGGA GGTTAGTAAG TTTCTGAGGT ACCGGAGTCG CGTAAAAGTG AGGTGTCAAT
```

FIG. 5-12

OIPE
DEC 02 2002
PATENT & TRADEMARK OFFICE
1613

pCMV-delNS35

```
   +2   S  P  G   E  I  N  R   V  A  A   C  L  R   K  L  G  V   P  P  L   R  A  W   R  H  R
6961  CTCTCCAGGT GAAATCAATA GGGTGGCCGC ATGCCTCAGA AAACTTGGGG TACCGCCCTT GCGAGCTTGG AGACACCGGG
      GAGAGGTCCA CTTTAGTTAT CCCACCGGCG TACGGAGTCT TTTGAACCCC ATGGCGGGAA CGCTCGAACC TCTGTGGCCC

   +2 A  R  S  V   R  A  R   L  L  A  R   G  G  R   A  A  I   C  G  K  Y   L  F  N   W  A  V
7041  CCCGGAGCGT CCGCGCTAGG CTTCTGGCCA GAGGAGGCAG GGCTGCCATA TGTGGCAAGT ACCTCTTCAA CTGGGCAGTA
      GGGCCTCGCA GGCGCGATCC GAAGACCGGT CTCCTCCGTC CCGACGGTAT ACACCGTTCA TGGAGAAGTT GACCCGTCAT

   +2  R  T  K  L   K  L  T   P  I  A   A  A  G  Q   L  D  L   S  G  W   F  T  A  G   Y  S  G
7121  AGAACAAAGC TCAAACTCAC TCCAATAGCG GCCGCTGGCC AGCTGGACTT GTCCGGCTGG TTCACGGCTG GCTACAGCGG
      TCTTGTTTCG AGTTTGAGTG AGGTTATCGC CGGCGACCGG TCGACCTGAA CAGGCCGACC AAGTGCCGAC CGATGTCGCC

   +2   G  D  I   Y  H  S  V   S  H  A   R  P  R   W  I  W  F   C  L  L   L  L  A   A  G  V
7201  GGGAGACATT TATCACAGCG TGTCTCATGC CCGGCCCCGC TGGATCTGGT TTTGCCTACT CCTGCTTGCT GCAGGGGTAG
      CCCTCTGTAA ATAGTGTCGC ACAGAGTACG GGCCGGGGCG ACCTAGACCA AAACGGATGA GGACGAACGA CGTCCCCATC

   +2 G  I  Y  L   L  P  N   R
7281  GCATCTACCT CCTCCCCAAC CGATGAAGGT TGGGGTAAAC ACTCCGGCCT AAAAAAAAAA AAAAATCTAG AAAGGCGCGC
      CGTAGATGGA GGAGGGGTTG GCTACTTCCA ACCCCATTTG TGAGGCCGGA TTTTTTTTTT TTTTTAGATC TTTCCGCGCG

                    BamHI      MluI
                    ------     ------
7361  CAAGATATCA AGGATCCACT ACGCGTTAGA GCTCGCTGAT CAGCCTCGAC TGTGCCTTCT AGTTGCCAGC CATCTGTTGT
      GTTCTATAGT TCCTAGGTGA TGCGCAATCT CGAGCGACTA GTCGGAGCTG ACACGGAAGA TCAACGGTCG GTAGACAACA

7441  TTGCCCCTCC CCCGTGCCTT CCTTGACCCT GGAAGGTGCC ACTCCCACTG TCCTTTCCTA ATAAAATGAG GAAATTGCAT
      AACGGGGAGG GGGCACGGAA GGAACTGGGA CCTTCCACGG TGAGGGTGAC AGGAAAGGAT TATTTTACTC CTTTAACGTA
```

FIG. 5-13

OIPE
DEC 02 2002
PATENT & TRADEMARK OFFICE
JC13

pCMV-delNS35

```
7521  CGCATTGTCT GAGTAGGTGT CATTCTATTC TGGGGGGTGG GGTGGGGCAG GACAGCAAGG GGGAGGATTG GGAAGACAAT
      GCGTAACAGA CTCATCCACA GTAAGATAAG ACCCCCCACC CCACCCCGTC CTGTCGTTCC CCCTCCTAAC CCTTCTGTTA

7601  AGCAGGCATG CTGGGGAGCT CTTCCGCTTC CTCGCTCACT GACTCGCTGC GCTCGGTCGT TCGGCTGCGG CGAGCGGTAT
      TCGTCCGTAC GACCCCTCGA GAAGGCGAAG GAGCGAGTGA CTGAGCGACG CGAGCCAGCA AGCCGACGCC GCTCGCCATA

7681  CAGCTCACTC AAAGGCGGTA ATACGGTTAT CCACAGAATC AGGGGATAAC GCAGGAAAGA ACATGTGAGC AAAAGGCCAG
      GTCGAGTGAG TTTCCGCCAT TATGCCAATA GGTGTCTTAG TCCCCTATTG CGTCCTTTCT TGTACACTCG TTTTCCGGTC

7761  CAAAAGGCCA GGAACCGTAA AAAGGCCGCG TTGCTGGCGT TTTTCCATAG GCTCCGCCCC CCTGACGAGC ATCACAAAAA
      GTTTTCCGGT CCTTGGCATT TTTCCGGCGC AACGACCGCA AAAAGGTATC CGAGGCGGGG GGACTGCTCG TAGTGTTTTT

7841  TCGACGCTCA AGTCAGAGGT GGCGAAACCC GACAGGACTA TAAAGATACC AGGCGTTTCC CCCTGGAAGC TCCCTCGTGC
      AGCTGCGAGT TCAGTCTCCA CCGCTTTGGG CTGTCCTGAT ATTTCTATGG TCCGCAAAGG GGGACCTTCG AGGGAGCACG

7921  GCTCTCCTGT TCCGACCCTG CCGCTTACCG GATACCTGTC CGCCTTTCTC CCTTCGGGAA GCGTGGCGCT TTCTCAATGC
      CGAGAGGACA AGGCTGGGAC GGCGAATGGC CTATGGACAG GCGGAAAGAG GGAAGCCCTT CGCACCGCGA AAGAGTTACG

8001  TCACGCTGTA GGTATCTCAG TTCGGTGTAG GTCGTTCGCT CCAAGCTGGG CTGTGTGCAC GAACCCCCCG TTCAGCCCGA
      AGTGCGACAT CCATAGAGTC AAGCCACATC CAGCAAGCGA GGTTCGACCC GACACACGTG CTTGGGGGGC AAGTCGGGCT

8081  CCGCTGCGCC TTATCCGGTA ACTATCGTCT TGAGTCCAAC CCGGTAAGAC ACGACTTATC GCCACTGGCA GCAGCCACTG
      GGCGACGCGG AATAGGCCAT TGATAGCAGA ACTCAGGTTG GGCCATTCTG TGCTGAATAG CGGTGACCGT CGTCGGTGAC

8161  GTAACAGGAT TAGCAGAGCG AGGTATGTAG GCGGTGCTAC AGAGTTCTTG AAGTGGTGGC CTAACTACGG CTACACTAGA
      CATTGTCCTA ATCGTCTCGC TCCATACATC CGCCACGATG TCTCAAGAAC TTCACCACCG GATTGATGCC GATGTGATCT
```

FIG. 5-14

PATENT & TRADEMARK OFFICE OIPE DEC 02 2002 JC13

pCMV-delNS35

```
8241  AGGACAGTAT TTGGTATCTG CGCTCTGCTG AAGCCAGTTA CCTTCGGAAA AAGAGTTGGT AGCTCTTGAT CCGGCAAACA
      TCCTGTCATA AACCATAGAC GCGAGACGAC TTCGGTCAAT GGAAGCCTTT TTCTCAACCA TCGAGAACTA GGCCGTTTGT

8321  AACCACCGCT GGTAGCGGTG GTTTTTTTGT TTGCAAGCAG CAGATTACGC GCAGAAAAAA AGGATCTCAA GAAGATCCTT
      TTGGTGGCGA CCATCGCCAC CAAAAAAACA AACGTTCGTC GTCTAATGCG CGTCTTTTTT TCCTAGAGTT CTTCTAGGAA

8401  TGATCTTTTC TACGGGGTCT GACGCTCAGT GGAACGAAAA CTCACGTTAA GGGATTTTGG TCATGAGATT ATCAAAAAGG
      ACTAGAAAAG ATGCCCCAGA CTGCGAGTCA CCTTGCTTTT GAGTGCAATT CCCTAAAACC AGTACTCTAA TAGTTTTTCC

8481  ATCTTCACCT AGATCCTTTT AAATTAAAAA TGAAGTTTTA AATCAATCTA AAGTATATAT GAGTAAACTT GGTCTGACAG
      TAGAAGTGGA TCTAGGAAAA TTTAATTTTT ACTTCAAAAT TTAGTTAGAT TTCATATATA CTCATTTGAA CCAGACTGTC

8561  TTACCAATGC TTAATCAGTG AGGCACCTAT CTCAGCGATC TGTCTATTTC GTTCATCCAT AGTTGCCTGA CTCCCCGTCG
      AATGGTTACG AATTAGTCAC TCCGTGGATA GAGTCGCTAG ACAGATAAAG CAAGTAGGTA TCAACGGACT GAGGGGCAGC

8641  TGTAGATAAC TACGATACGG GAGGGCTTAC CATCTGGCCC CAGTGCTGCA ATGATACCGC GAGACCCACG CTCACCGGCT
      ACATCTATTG ATGCTATGCC CTCCCGAATG GTAGACCGGG GTCACGACGT TACTATGGCG CTCTGGGTGC GAGTGGCCGA

8721  CCAGATTTAT CAGCAATAAA CCAGCCAGCC GGAAGGGCCG AGCGCAGAAG TGGTCCTGCA ACTTTATCCG CCTCCATCCA
      GGTCTAAATA GTCGTTATTT GGTCGGTCGG CCTTCCCGGC TCGCGTCTTC ACCAGGACGT TGAAATAGGC GGAGGTAGGT

8801  GTCTATTAAT TGTTGCCGGG AAGCTAGAGT AAGTAGTTCG CCAGTTAATA GTTTGCGCAA CGTTGTTGCC ATTGCTACAG
      CAGATAATTA ACAACGGCCC TTCGATCTCA TTCATCAAGC GGTCAATTAT CAAACGCGTT GCAACAACGG TAACGATGTC

8881  GCATCGTGGT GTCACGCTCG TCGTTTGGTA TGGCTTCATT CAGCTCCGGT TCCCAACGAT CAAGGCGAGT TACATGATCC
      CGTAGCACCA CAGTGCGAGC AGCAAACCAT ACCGAAGTAA GTCGAGGCCA AGGGTTGCTA GTTCCGCTCA ATGTACTAGG
```

FIG. 5-15

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE
1613

pCMV-delNS35

```
8961  CCCATGTTGT GCAAAAAAGC GGTTAGCTCC TTCGGTCCTC CGATCGTTGT CAGAAGTAAG TTGGCCGCAG TGTTATCACT
      GGGTACAACA CGTTTTTTCG CCAATCGAGG AAGCCAGGAG GCTAGCAACA GTCTTCATTC AACCGGCGTC ACAATAGTGA

9041  CATGGTTATG GCAGCACTGC ATAATTCTCT TACTGTCATG CCATCCGTAA GATGCTTTTC TGTGACTGGT GAGTACTCAA
      GTACCAATAC CGTCGTGACG TATTAAGAGA ATGACAGTAC GGTAGGCATT CTACGAAAAG ACACTGACCA CTCATGAGTT

9121  CCAAGTCATT CTGAGAATAG TGTATGCGGC GACCGAGTTG CTCTTGCCCG GCGTCAATAC GGGATAATAC CGCGCCACAT
      GGTTCAGTAA GACTCTTATC ACATACGCCG CTGGCTCAAC GAGAACGGGC CGCAGTTATG CCCTATTATG GCGCGGTGTA

9201  AGCAGAACTT TAAAAGTGCT CATCATTGGA AAACGTTCTT CGGGGCGAAA ACTCTCAAGG ATCTTACCGC TGTTGAGATC
      TCGTCTTGAA ATTTTCACGA GTAGTAACCT TTTGCAAGAA GCCCCGCTTT TGAGAGTTCC TAGAATGGCG ACAACTCTAG

9281  CAGTTCGATG TAACCCACTC GTGCACCCAA CTGATCTTCA GCATCTTTTA CTTTCACCAG CGTTTCTGGG TGAGCAAAAA
      GTCAAGCTAC ATTGGGTGAG CACGTGGGTT GACTAGAAGT CGTAGAAAAT GAAAGTGGTC GCAAAGACCC ACTCGTTTTT

9361  CAGGAAGGCA AAATGCCGCA AAAAAGGGAA TAAGGGCGAC ACGGAAATGT TGAATACTCA TACTCTTCCT TTTTCAATAT
      GTCCTTCCGT TTTACGGCGT TTTTTCCCTT ATTCCCGCTG TGCCTTTACA ACTTATGAGT ATGAGAAGGA AAAAGTTATA

9441  TATTGAAGCA TTTATCAGGG TTATTGTCTC ATGAGCGGAT ACATATTTGA ATGTATTTAG AAAAATAAAC AAATAGGGGT
      ATAACTTCGT AAATAGTCCC AATAACAGAG TACTCGCCTA TGTATAAACT TACATAAATC TTTTTATTTG TTTATCCCCA

9521  TCCGCGCACA TTTCCCCGAA AAGTGCCACC TGACGTCTAA GAAACCATTA TTATCATGAC ATTAACCTAT AAAAATAGGC
      AGGCGCGTGT AAAGGGGCTT TTCACGGTGG ACTGCAGATT CTTTGGTAAT AATAGTACTG TAATTGGATA TTTTTATCCG

9601  GTATCACGAG GCCCTTTCGT C
      CATAGTGCTC CGGGAAAGCA G
```

FIG. 5-16

PATENT & TRADEMARK OFFICE
DEC 0 2 2002
OIPE
JC13

pCMV-II

```
   1  TCGCGCGTTT CGGTGATGAC GGTGAAAACC TCTGACACAT GCAGCTCCCG GAGACGGTCA CAGCTTGTCT GTAAGCGGAT
      AGCGCGCAAA GCCACTACTG CCACTTTTGG AGACTGTGTA CGTCGAGGGC CTCTGCCAGT GTCGAACAGA CATTCGCCTA

  81  GCCGGGAGCA GACAAGCCCG TCAGGGCGCG TCAGCGGGTG TTGGCGGGTG TCGGGGCTGG CTTAACTATG CGGCATCAGA
      CGGCCCTCGT CTGTTCGGGC AGTCCCGCGC AGTCGCCCAC AACCGCCCAC AGCCCCGACC GAATTGATAC GCCGTAGTCT

 161  GCAGATTGTA CTGAGAGTGC ACCATATGAA GCTTTTTGCA AAAGCCTAGG CCTCCAAAAA AGCCTCCTCA CTACTTCTGG
      CGTCTAACAT GACTCTCACG TGGTATACTT CGAAAAACGT TTTCGGATCC GGAGGTTTTT TCGGAGGAGT GATGAAGACC

 241  AATAGCTCAG AGGCCGAGGC GGCCTCGGCC TCTGCATAAA TAAAAAAAAT TAGTCAGCCA TGGGGCGGAG AATGGGCGGA
      TTATCGAGTC TCCGGCTCCG CCGGAGCCGG AGACGTATTT ATTTTTTTTA ATCAGTCGGT ACCCCGCCTC TTACCCGCCT

 321  ACTGGGCGGG GAGGGAATTA TTGGCTATTG GCCATTGCAT ACGTTGTATC TATATCATAA TATGTACATT TATATTGGCT
      TGACCCGCCC CTCCCTTAAT AACCGATAAC CGGTAACGTA TGCAACATAG ATATAGTATT ATACATGTAA ATATAACCGA

 401  CATGTCCAAT ATGACCGCCA TGTTGACATT GATTATTGAC TAGTTATTAA TAGTAATCAA TTACGGGGTC ATTAGTTCAT
      GTACAGGTTA TACTGGCGGT ACAACTGTAA CTAATAACTG ATCAATAATT ATCATTAGTT AATGCCCCAG TAATCAAGTA

 481  AGCCCATATA TGGAGTTCCG CGTTACATAA CTTACGGTAA ATGGCCCGCC TGGCTGACCG CCCAACGACC CCCGCCCATT
      TCGGGTATAT ACCTCAAGGC GCAATGTATT GAATGCCATT TACCGGGCGG ACCGACTGGC GGGTTGCTGG GGGCGGGTAA

 561  GACGTCAATA ATGACGTATG TTCCCATAGT AACGCCAATA GGGACTTTCC ATTGACGTCA ATGGGTGGAG TATTTACGGT
      CTGCAGTTAT TACTGCATAC AAGGGTATCA TTGCGGTTAT CCCTGAAAGG TAACTGCAGT TACCCACCTC ATAAATGCCA

 641  AAACTGCCCA CTTGGCAGTA CATCAAGTGT ATCATATGCC AAGTCCGCCC CCTATTGACG TCAATGACGG TAAATGGCCC
      TTTGACGGGT GAACCGTCAT GTAGTTCACA TAGTATACGG TTCAGGCGGG GGATAACTGC AGTTACTGCC ATTTACCGGG
```

FIG. 7-1

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE

pCMV-II

```
721  GCCTGGCATT ATGCCCAGTA CATGACCTTA CGGGACTTTC CTACTTGGCA GTACATCTAC GTATTAGTCA TCGCTATTAC
     CGGACCGTAA TACGGGTCAT GTACTGGAAT GCCCTGAAAG GATGAACCGT CATGTAGATG CATAATCAGT AGCGATAATG

801  CATGGTGATG CGGTTTTGGC AGTACACCAA TGGGCGTGGA TAGCGGTTTG ACTCACGGGG ATTTCCAAGT CTCCACCCCA
     GTACCACTAC GCCAAAACCG TCATGTGGTT ACCCGCACCT ATCGCCAAAC TGAGTGCCCC TAAAGGTTCA GAGGTGGGGT

881  TTGACGTCAA TGGGAGTTTG TTTTGGCACC AAAATCAACG GGACTTTCCA AAATGTCGTA ATAACCCCGC CCCGTTGACG
     AACTGCAGTT ACCCTCAAAC AAAACCGTGG TTTTAGTTGC CCTGAAAGGT TTTACAGCAT TATTGGGGCG GGGCAACTGC

961  CAAATGGGCG GTAGGCGTGT ACGGTGGGAG GTCTATATAA GCAGAGCTCG TTTAGTGAAC CGTCAGATCG CCTGGAGACG
     GTTTACCCGC CATCCGCACA TGCCACCCTC CAGATATATT CGTCTCGAGC AAATCACTTG GCAGTCTAGC GGACCTCTGC

1041 CCATCCACGC TGTTTTGACC TCCATAGAAG ACACCGGGAC CGATCCAGCC TCCGCGGCCG GGAACGGTGC ATTGGAACGC
     GGTAGGTGCG ACAAAACTGG AGGTATCTTC TGTGGCCCTG GCTAGGTCGG AGGCGCCGGC CCTTGCCACG TAACCTTGCG

1121 GGATTCCCCG TGCCAAGAGT GACGTAAGTA CCGCCTATAG ACTCTATAGG CACACCCCTT TGGCTCTTAT GCATGCTATA
     CCTAAGGGGC ACGGTTCTCA CTGCATTCAT GGCGGATATC TGAGATATCC GTGTGGGGAA ACCGAGAATA CGTACGATAT

1201 CTGTTTTTGG CTTGGGGCCT ATACACCCCC GCTCCTTATG CTATAGGTGA TGGTATAGCT TAGCCTATAG GTGTGGGTTA
     GACAAAAAAC GAACCCCGGA TATGTGGGGG CGAGGAATAC GATATCCACT ACCATATCGA ATCGGATATC CACACCCAAT

1281 TTGACCATTA TTGACCACTC CCCTATTGGT GACGATACTT TCCATTACTA ATCCATAACA TGGCTCTTTG CCACAACTAT
     AACTGGTAAT AACTGGTGAG GGGATAACCA CTGCTATGAA AGGTAATGAT TAGGTATTGT ACCGAGAAAC GGTGTTGATA

1361 CTCTATTGGC TATATGCCAA TACTCTGTCC TTCAGAGACT GACACGGACT CTGTATTTTT ACAGGATGGG GTCCATTTAT
     GAGATAACCG ATATACGGTT ATGAGACAGG AAGTCTCTGA CTGTGCCTGA GACATAAAAA TGTCCTACCC CAGGTAAATA
```

FIG. 7-2

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE
JC13

pCMV-II

```
1441  TATTTACAAA TTCACATATA CAACAACGCC GTCCCCCGTG CCCGCAGTTT TTATTAAACA TAGCGTGGGA TCTCCGACAT
      ATAAATGTTT AAGTGTATAT GTTGTTGCGG CAGGGGGCAC GGGCGTCAAA AATAATTTGT ATCGCACCCT AGAGGCTGTA

1521  CTCGGGTACG TGTTCCGGAC ATGGGCTCTT CTCCGGTAGC GGCGGAGCTT CCACATCCGA GCCCTGGTCC CATCCGTCCA
      GAGCCCATGC ACAAGGCCTG TACCCGAGAA GAGGCCATCG CCGCCTCGAA GGTGTAGGCT CGGGACCAGG GTAGGCAGGT

1601  GCGGCTCATG GTCGCTCGGC AGCTCCTTGC TCCTAACAGT GGAGGCCAGA CTTAGGCACA GCACAATGCC CACCACCACC
      CGCCGAGTAC CAGCGAGCCG TCGAGGAACG AGGATTGTCA CCTCCGGTCT GAATCCGTGT CGTGTTACGG GTGGTGGTGG

1681  AGTGTGCCGC ACAAGGCCGT GGCGGTAGGG TATGTGTCTG AAAATGAGCT CGGAGATTGG GCTCGCACCT GGACGCAGAT
      TCACACGGCG TGTTCCGGCA CCGCCATCCC ATACACAGAC TTTTACTCGA GCCTCTAACC CGAGCGTGGA CCTGCGTCTA

1761  GGAAGACTTA AGGCAGCGGC AGAAGAAGAT GCAGGCAGCT GAGTTGTTGT ATTCTGATAA GAGTCAAGGG TAACTCCCGT
      CCTTCTGAAT TCCGTCGCCG TCTTCTTCTA CGTCCGTCGA CTCAACAACA TAAGACTATT CTCAGTCTCC ATTGAGGGCA

1841  TGCGGTGCTG TTAACGGTGG AGGGCAGTGT AGTCTGAGCA GTACTCGTTG CTGCCGCGCG CGCCACCAGA CATAATAGCT
      ACGCCACGAC AATTGCCACC TCCCGTCACA TCAGACTCGT CATGAGCAAC GACGGCGCGC GCGGTGGTCT GTATTATCGA

                                                                          EcoRI
                                                                          ------
1921  GACAGACTAA CAGACTGTTC CTTTCCATGG GTCTTTTCTG CAGTCACCGT CGTCGACCTA AGAATTCAGA CTCGAGCAAG
      CTGTCTGATT GTCTGACAAG GAAAGGTACC CAGAAAAGAC GTCAGTGGCA GCAGCTGGAT TCTTAAGTCT GAGCTCGTTC

      XbaI                          BamHI     MluI
      ------                        -------   -------
2001  TCTAGAAAGG CGCGCCAAGA TATCAAGGAT CCACTACGCG TTAGAGCTCG CTGATCAGCC TCGACTGTGC CTTCTAGTTG
      AGATCTTTCC GCGCGGTTCT ATAGTTCCTA GGTGATGCGC AATCTCGAGC GACTAGTCGG AGCTGACACG GAAGATCAAC
```

FIG. 7-3

PATENT & TRADEMARK OFFICE
DEC 0 2 2002
OIPE
JC13

pCMV-II

```
2081  CCAGCCATCT GTTGTTTGCC CCTCCCCCGT GCCTTCCTTG ACCCTGGAAG GTGCCACTCC CACTGTCCTT TCCTAATAAA
      GGTCGGTAGA CAACAAACGG GGAGGGGGCA CGGAAGGAAC TGGGACCTTC CACGGTGAGG GTGACAGGAA AGGATTATTT

2161  ATGAGGAAAT TGCATCGCAT TGTCTGAGTA GGTGTCATTC TATTCTGGGG GGTGGGGTGG GGCAGGACAG CAAGGGGGAG
      TACTCCTTTA ACGTAGCGTA ACAGACTCAT CCACAGTAAG ATAAGACCCC CCACCCCACC CCGTCCTGTC GTTCCCCCTC

2241  GATTGGGAAG ACAATAGCAG GCATGCTGGG GAGCTCTTCC GCTTCCTCGC TCACTGACTC GCTGCGCTCG GTCGTTCGGC
      CTAACCCTTC TGTTATCGTC CGTACGACCC CTCGAGAAGG CGAAGGAGCG AGTGACTGAG CGACGCGAGC CAGCAAGCCG

2321  TGCGGCGAGC GGTATCAGCT CACTCAAAGG CGGTAATACG GTTATCCACA GAATCAGGGG ATAACGCAGG AAAGAACATG
      ACGCCGCTCG CCATAGTCGA GTGAGTTTCC GCCATTATGC CAATAGGTGT CTTAGTCCCC TATTGCGTCC TTTCTTGTAC

2401  TGAGCAAAAG GCCAGCAAAA GGCCAGGAAC CGTAAAAAGG CCGCGTTGCT GGCGTTTTTC CATAGGCTCC GCCCCCCTGA
      ACTCGTTTTC CGGTCGTTTT CCGGTCCTTG GCATTTTTCC GGCGCAACGA CCGCAAAAAG GTATCCGAGG CGGGGGGACT

2481  CGAGCATCAC AAAAATCGAC GCTCAAGTCA GAGGTGGCGA AACCCGACAG GACTATAAAG ATACCAGGCG TTTCCCCCTG
      GCTCGTAGTG TTTTTAGCTG CGAGTTCAGT CTCCACCGCT TTGGGCTGTC CTGATATTTC TATGGTCCGC AAAGGGGGAC

2561  GAAGCTCCCT CGTGCGCTCT CCTGTTCCGA CCCTGCCGCT TACCGGATAC CTGTCCGCCT TTCTCCCTTC GGGAAGCGTG
      CTTCGAGGGA GCACGCGAGA GAACAAGGCT GGGACGGCGA ATGGCCTATG GACAGGCGGA AAGAGGGAAG CCCTTCGCAC

2641  GCGCTTTCTC AATGCTCACG CTGTAGGTAT CTCAGTTCGG TGTAGGTCGT TCGCTCCAAG CTGGGCTGTG TGCACGAACC
      CGCGAAAGAG TTACGAGTGC GACATCCATA GAGTCAAGCC ACATCCAGCA AGCGAGGTTC GACCCGACAC ACGTGCTTGG

2721  CCCCGTTCAG CCCGACCGCT GCGCCTTATC CGGTAACTAT CGTCTTGAGT CCAACCCGGT AAGACACGAC TTATCGCCAC
      GGGGCAAGTC GGGCTGGCGA CGCGGAATAG GCCATTGATA GCAGAACTCA GGTTGGGCCA TTCTGTGCTG AATAGCGGTG
```

FIG. 7-4

OIPE
DEC 02 2002
PATENT & TRADEMARK OFFICE

pCMV-II

```
2801  TGGCAGCAGC CACTGGTAAC AGGATTAGCA GAGCGAGGTA TGTAGGCGGT GCTACAGAGT TCTTGAAGTG GTGGCCTAAC
      ACCGTCGTCG GTGACCATTG TCCTAATCGT CTCGCTCCAT ACATCCGCCA CGATGTCTCA AGAACTTCAC CACCGGATTG

2881  TACGGCTACA CTAGAAGGAC AGTATTTGGT ATCTGCGCTC TGCTGAAGCC AGTTACCTTC GGAAAAAGAG TTGGTAGCTC
      ATGCCGATGT GATCTTCCTG TCATAAACCA TAGACGCGAG ACGACTTCGG TCAATGGAAG CCTTTTTCTC AACCATCGAG

2961  TTGATCCGGC AAACAAACCA CCGCTGGTAG CGGTGGTTTT TTTGTTTGCA AGCAGCAGAT TACGCGCAGA AAAAAAGGAT
      AACTAGGCCG TTTGTTTGGT GGCGACCATC GCCACCAAAA AAACAAACGT TCGTCGTCTA ATGCGCGTCT TTTTTTCCTA

3041  CTCAAGAAGA TCCTTTGATC TTTTCTACGG GGTCTGACGC TCAGTGGAAC GAAAACTCAC GTTAAGGGAT TTTGGTCATG
      GAGTTCTTCT AGGAAACTAG AAAAGATGCC CCAGACTGCG AGTCACCTTG CTTTTGAGTG CAATTCCCTA AAACCAGTAC

3121  AGATTATCAA AAAGGATCTT CACCTAGATC CTTTTAAATT AAAAATGAAG TTTTAAATCA ATCTAAAGTA TATATGAGTA
      TCTAATAGTT TTTCCTAGAA GTGGATCTAG GAAAATTTAA TTTTTACTTC AAAATTTAGT TAGATTTCAT ATATACTCAT

3201  AACTTGGTCT GACAGTTACC AATGCTTAAT CAGTGAGGCA CCTATCTCAG CGATCTGTCT ATTTCGTTCA TCCATAGTTG
      TTGAACCAGA CTGTCAATGG TTACGAATTA GTCACTCCGT GGATAGAGTC GCTAGACAGA TAAAGCAAGT AGGTATCAAC

3281  CCTGACTCCC CGTCGTGTAG ATAACTACGA TACGGGAGGG CTTACCATCT GGCCCCAGTG CTGCAATGAT ACCGCGAGAC
      GGACTGAGGG GCAGCACATC TATTGATGCT ATGCCCTCCC GAATGGTAGA CCGGGGTCAC GACGTTACTA TGGCGCTCTG

3361  CCACGCTCAC CGGCTCCAGA TTTATCAGCA ATAAACCAGC CAGCCGGAAG GGCCGAGCGC AGAAGTGGTC CTGCAACTTT
      GGTGCGAGTG GCCGAGGTCT AAATAGTCGT TATTTGGTCG GTCGGCCTTC CCGGCTCGCG TCTTCACCAG GACGTTGAAA

3441  ATCCGCCTCC ATCCAGTCTA TTAATTGTTG CCGGGAAGCT AGAGTAAGTA GTTCGCCAGT TAATAGTTTG CGCAACGTTG
      TAGGCGGAGG TAGGTCAGAT AATTAACAAC GGCCCTTCGA TCTCATTCAT CAAGCGGTCA ATTATCAAAC GCGTTGCAAC
```

FIG. 7-5

OIPE
DEC 02 2002
PATENT & TRADEMARK OFFICE
JC13

pCMV-II

```
3521  TTGCCATTGC TACAGGCATC GTGGTGTCAC GCTCGTCGTT TGGTATGGCT TCATTCAGCT CCGGTTCCCA ACGATCAAGG
      AACGGTAACG ATGTCCGTAG CACCACAGTG CGAGCAGCAA ACCATACCGA AGTAAGTCGA GGCCAAGGGT TGCTAGTTCC

3601  CGAGTTACAT GATCCCCCAT GTTGTGCAAA AAAGCGGTTA GCTCCTTCGG TCCTCCGATC GTTGTCAGAA GTAAGTTGGC
      GCTCAATGTA CTAGGGGGTA CAACACGTTT TTTCGCCAAT CGAGGAAGCC AGGAGGCTAG CAACAGTCTT CATTCAACCG

3681  CGCAGTGTTA TCACTCATGG TTATGGCAGC ACTGCATAAT TCTCTTACTG TCATGCCATC CGTAAGATGC TTTTCTGTGA
      GCGTCACAAT AGTGAGTACC AATACCGTCG TGACGTATTA AGAGAATGAC AGTACGGTAG GCATTCTACG AAAAGACACT

3761  CTGGTGAGTA CTCAACCAAG TCATTCTGAG AATAGTGTAT GCGGCGACCG AGTTGCTCTT GCCCGGCGTC AATACGGGAT
      GACCACTCAT GAGTTGGTTC AGTAAGACTC TTATCACATA CGCCGCTGGC TCAACGAGAA CGGGCCGCAG TTATGCCCTA

3841  AATACCGCGC CACATAGCAG AACTTTAAAA GTGCTCATCA TTGGAAAACG TTCTTCGGGG CGAAAACTCT CAAGGATCTT
      TTATGGCGCG GTGTATCGTC TTGAAATTTT CACGAGTAGT AACCTTTTGC AAGAAGCCCC GCTTTTGAGA GTTCCTAGAA

3921  ACCGCTGTTG AGATCCAGTT CGATGTAACC CACTCGTGCA CCCAACTGAT CTTCAGCATC TTTTACTTTC ACCAGCGTTT
      TGGCGACAAC TCTAGGTCAA GCTACATTGG GTGAGCACGT GGGTTGACTA GAAGTCGTAG AAAATGAAAG TGGTCGCAAA

4001  CTGGGTGAGC AAAAACAGGA AGGCAAAATG CCGCAAAAAA GGGAATAAGG GCGACACGGA AATGTTGAAT ACTCATACTC
      GACCCACTCG TTTTTGTCCT TCCGTTTTAC GGCGTTTTTT CCCTTATTCC CGCTGTGCCT TTACAACTTA TGAGTATGAG

4081  TTCCTTTTTC AATATTATTG AAGCATTTAT CAGGGTTATT GTCTCATGAG CGGATACATA TTTGAATGTA TTTAGAAAAA
      AAGGAAAAAG TTATAATAAC TTCGTAAATA GTCCCAATAA CAGAGTACTC GCCTATGTAT AAACTTACAT AAATCTTTTT

4161  TAAACAAATA GGGGTTCCGC GCACATTTCC CCGAAAAGTG CCACCTGACG TCTAAGAAAC CATTATTATC ATGACATTAA
      ATTTGTTTAT CCCCAAGGCG CGTGTAAAGG GGCTTTTCAC GGTGGACTGC AGATTCTTTG GTAATAATAG TACTGTAATT

4241  CCTATAAAAA TAGGCGTATC ACGAGGCCCT TTCGTC
      GGATATTTTT ATCCGCATAG TGCTCCGGGA AAGCAG
```

FIG. 7-6

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE

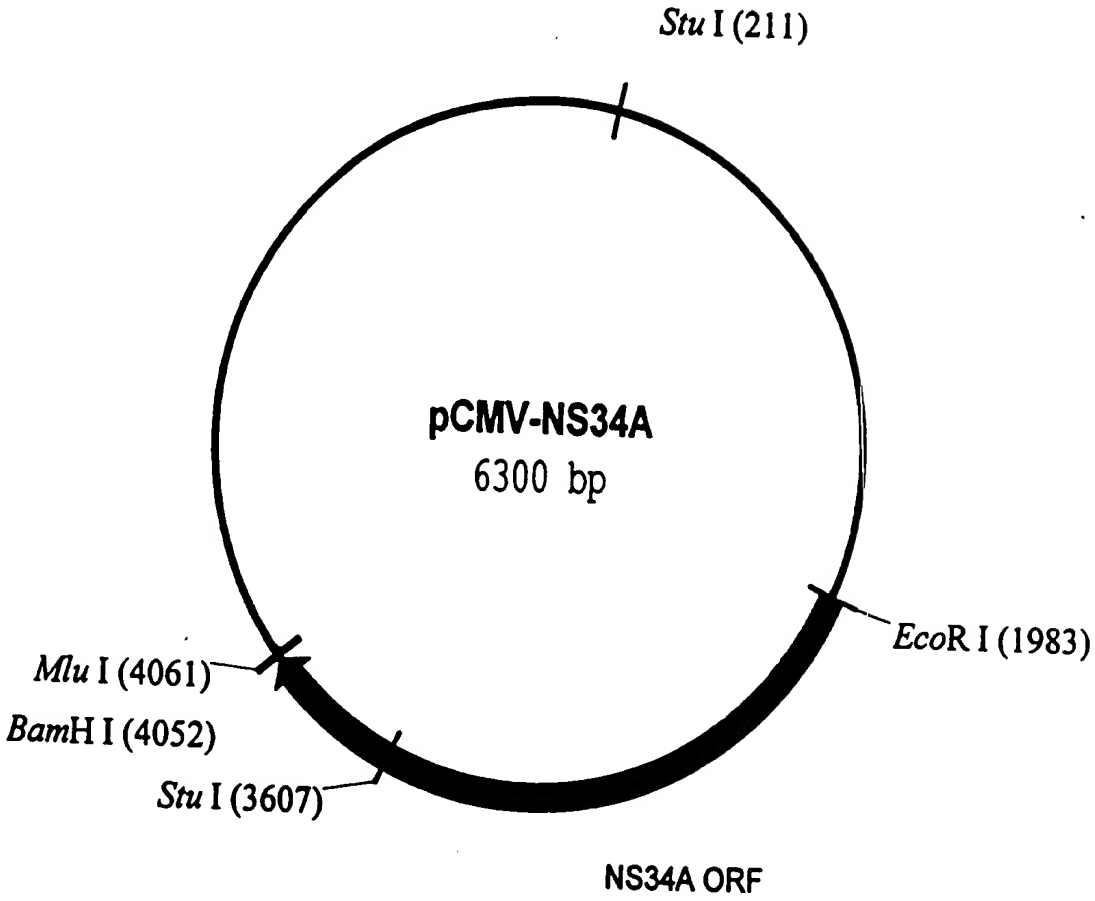

FIG. 8

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

pCMV-NS34A

```
   1  TCGCGCGTTT CGGTGATGAC GGTGAAAACC TCTGACACAT GCAGCTCCCG
      AGCGCGCAAA GCCACTACTG CCACTTTTGG AGACTGTGTA CGTCGAGGGC

  51  GAGACGGTCA CAGCTTGTCT GTAAGCGGAT GCCGGGAGCA GACAAGCCCG
      CTCTGCCAGT GTCGAACAGA CATTCGCCTA CGGCCCTCGT CTGTTCGGGC

 101  TCAGGGCGCG TCAGCGGGTG TTGGCGGGTG TCGGGGCTGG CTTAACTATG
      AGTCCCGCGC AGTCGCCCAC AACCGCCCAC AGCCCCGACC GAATTGATAC

 151  CGGCATCAGA GCAGATTGTA CTGAGAGTGC ACCATATGAA GCTTTTTGCA
      GCCGTAGTCT CGTCTAACAT GACTCTCACG TGGTATACTT CGAAAAACGT

              StuI
             ~~~~~~~
 201  AAAGCCTAGG CCTCCAAAAA AGCCTCCTCA CTACTTCTGG AATAGCTCAG
      TTTCGGATCC GGAGGTTTTT TCGGAGGAGT GATGAAGACC TTATCGAGTC

 251  AGGCCGAGGC GGCCTCGGCC TCTGCATAAA TAAAAAAAAT TAGTCAGCCA
      TCCGGCTCCG CCGGAGCCGG AGACGTATTT ATTTTTTTTA ATCAGTCGGT

 301  TGGGGCGGAG AATGGGCGGA ACTGGGCGGG GAGGGAATTA TTGGCTATTG
      ACCCCGCCTC TTACCCGCCT TGACCCGCCC CTCCCTTAAT AACCGATAAC

 351  GCCATTGCAT ACGTTGTATC TATATCATAA TATGTACATT TATATTGGCT
      CGGTAACGTA TGCAACATAG ATATAGTATT ATACATGTAA ATATAACCGA

 401  CATGTCCAAT ATGACCGCCA TGTTGACATT GATTATTGAC TAGTTATTAA
      GTACAGGTTA TACTGGCGGT ACAACTGTAA CTAATAACTG ATCAATAATT

 451  TAGTAATCAA TTACGGGGTC ATTAGTTCAT AGCCCATATA TGGAGTTCCG
      ATCATTAGTT AATGCCCCAG TAATCAAGTA TCGGGTATAT ACCTCAAGGC

 501  CGTTACATAA CTTACGGTAA ATGGCCCGCC TGGCTGACCG CCCAACGACC
      GCAATGTATT GAATGCCATT TACCGGGCGG ACCGACTGGC GGGTTGCTGG

 551  CCCGCCCATT GACGTCAATA ATGACGTATG TTCCCATAGT AACGCCAATA
      GGGCGGGTAA CTGCAGTTAT TACTGCATAC AAGGGTATCA TTGCGGTTAT

 601  GGGACTTTCC ATTGACGTCA ATGGGTGGAG TATTTACGGT AAACTGCCCA
      CCCTGAAAGG TAACTGCAGT TACCCACCTC ATAAATGCCA TTTGACGGGT

 651  CTTGGCAGTA CATCAAGTGT ATCATATGCC AAGTCCGCCC CCTATTGACG
      GAACCGTCAT GTAGTTCACA TAGTATACGG TTCAGGCGGG GGATAACTGC

 701  TCAATGACGG TAAATGGCCC GCCTGGCATT ATGCCCAGTA CATGACCTTA
      AGTTACTGCC ATTTACCGGG CGGACCGTAA TACGGGTCAT GTACTGGAAT

 751  CGGGACTTTC CTACTTGGCA GTACATCTAC GTATTAGTCA TCGCTATTAC
      GCCCTGAAAG GATGAACCGT CATGTAGATG CATAATCAGT AGCGATAATG

 801  CATGGTGATG CGGTTTTGGC AGTACACCAA TGGGCGTGGA TAGCGGTTTG
      GTACCACTAC GCCAAAACCG TCATGTGGTT ACCCGCACCT ATCGCCAAAC

 851  ACTCACGGGG ATTTCCAAGT CTCCACCCCA TTGACGTCAA TGGGAGTTTG
      TGAGTGCCCC TAAAGGTTCA GAGGTGGGGT AACTGCAGTT ACCCTCAAAC
```

FIG. 9-1

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

pCMV-NS34A

```
 901  TTTTGGCACC AAAATCAACG GGACTTTCCA AAATGTCGTA ATAACCCCGC
      AAAACCGTGG TTTTAGTTGC CCTGAAAGGT TTTACAGCAT TATTGGGGCG

 951  CCCGTTGACG CAAATGGGCG GTAGGCGTGT ACGGTGGGAG GTCTATATAA
      GGGCAACTGC GTTTACCCGC CATCCGCACA TGCCACCCTC CAGATATATT

1001  GCAGAGCTCG TTTAGTGAAC CGTCAGATCG CCTGGAGACG CCATCCACGC
      CGTCTCGAGC AAATCACTTG GCAGTCTAGC GGACCTCTGC GGTAGGTGCG

1051  TGTTTTGACC TCCATAGAAG ACACCGGGAC CGATCCAGCC TCCGCGGCCG
      ACAAAACTGG AGGTATCTTC TGTGGCCCTG GCTAGGTCGG AGGCGCCGGC

1101  GGAACGGTGC ATTGGAACGC GGATTCCCCG TGCCAAGAGT GACGTAAGTA
      CCTTGCCACG TAACCTTGCG CCTAAGGGGC ACGGTTCTCA CTGCATTCAT

1151  CCGCCTATAG ACTCTATAGG CACACCCCTT TGGCTCTTAT GCATGCTATA
      GGCGGATATC TGAGATATCC GTGTGGGGAA ACCGAGAATA CGTACGATAT

1201  CTGTTTTTGG CTTGGGGCCT ATACACCCCC GCTCCTTATG CTATAGGTGA
      GACAAAAACC GAACCCCGGA TATGTGGGGG CGAGGAATAC GATATCCACT

1251  TGGTATAGCT TAGCCTATAG GTGTGGGTTA TTGACCATTA TTGACCACTC
      ACCATATCGA ATCGGATATC CACACCCAAT AACTGGTAAT AACTGGTGAG

1301  CCCTATTGGT GACGATACTT TCCATTACTA ATCCATAACA TGGCTCTTTG
      GGGATAACCA CTGCTATGAA AGGTAATGAT TAGGTATTGT ACCGAGAAAC

1351  CCACAACTAT CTCTATTGGC TATATGCCAA TACTCTGTCC TTCAGAGACT
      GGTGTTGATA GAGATAACCG ATATACGGTT ATGAGACAGG AAGTCTCTGA

1401  GACACGGACT CTGTATTTTT ACAGGATGGG GTCCATTTAT TATTTACAAA
      CTGTGCCTGA GACATAAAAA TGTCCTACCC CAGGTAAATA ATAAATGTTT

1451  TTCACATATA CAACAACGCC GTCCCCCGTG CCCGCAGTTT TTATTAAACA
      AAGTGTATAT GTTGTTGCGG CAGGGGGCAC GGGCGTCAAA AATAATTTGT

1501  TAGCGTGGGA TCTCCGACAT CTCGGGTACG TGTTCCGGAC ATGGGCTCTT
      ATCGCACCCT AGAGGCTGTA GAGCCCATGC ACAAGGCCTG TACCCGAGAA

1551  CTCCGGTAGC GGCGGAGCTT CCACATCCGA GCCCTGGTCC CATCCGTCCA
      GAGGCCATCG CCGCCTCGAA GGTGTAGGCT CGGGACCAGG GTAGGCAGGT

1601  GCGGCTCATG GTCGCTCGGC AGCTCCTTGC TCCTAACAGT GGAGGCCAGA
      CGCCGAGTAC CAGCGAGCCG TCGAGGAACG AGGATTGTCA CCTCCGGTCT

1651  CTTAGGCACA GCACAATGCC CACCACCACC AGTGTGCCGC ACAAGGCCGT
      GAATCCGTGT CGTGTTACGG GTGGTGGTGG TCACACGGCG TGTTCCGGCA

1701  GGCGGTAGGG TATGTGTCTG AAAATGAGCT CGGAGATTGG GCTCGCACCT
      CCGCCATCCC ATACACAGAC TTTTACTCGA GCCTCTAACC CGAGCGTGGA

1751  GGACGCAGAT GGAAGACTTA AGGCAGCGGC AGAAGAAGAT GCAGGCAGCT
      CCTGCGTCTA CCTTCTGAAT TCCGTCGCCG TCTTCTTCTA CGTCCGTCGA

1801  GAGTTGTTGT ATTCTGATAA GAGTCAGAGG TAACTCCCGT TGCGGTGCTG
      CTCAACAACA TAAGACTATT CTCAGTCTCC ATTGAGGGCA ACGCCACGAC
```

FIG. 9-2

OIPE JC13 DEC 0 2 2002 PATENT & TRADEMARK OFFICE

pCMV-NS34A

```
1851  TTAACGGTGG AGGGCAGTGT AGTCTGAGCA GTACTCGTTG CTGCCGCGCG
      AATTGCCACC TCCCGTCACA TCAGACTCGT CATGAGCAAC GACGGCGCGC

1901  CGCCACCAGA CATAATAGCT GACAGACTAA CAGACTGTTC CTTTCCATGG
      GCGGTGGTCT GTATTATCGA CTGTCTGATT GTCTGACAAG GAAAGGTACC

  +2                                                  M  A  P
                                              EcoRI
                                              ~~~~~~
1951  GTCTTTTCTG CAGTCACCGT CGTCGACCTA AGAATTCACC ATGGCGCCCA
      CAGAAAAGAC GTCAGTGGCA GCAGCTGGAT TCTTAAGTGG TACCGCGGGT

  +2  I  T  A  Y  A  Q  Q  T  R  G  L  L  G  C  I  I  T
2001  TCACGGCGTA CGCCCAGCAG ACAAGGGGCC TCCTAGGGTG CATAATCACC
      AGTGCCGCAT GCGGGTCGTC TGTTCCCCGG AGGATCCCAC GTATTAGTGG

  +2  S  L  T  G  R  D  K  N  Q  V  E  G  E  V  Q  I  V
2051  AGCCTAACTG GCCGGGACAA AAACCAAGTG GAGGGTGAGG TCCAGATTGT
      TCGGATTGAC CGGCCCTGTT TTTGGTTCAC CTCCCACTCC AGGTCTAACA

  +2  S  T  A  A  Q  T  F  L  A  T  C  I  N  G  V  C
2101  GTCAACTGCT GCCCAAACCT TCCTGGCAAC GTGCATCAAT GGGGTGTGCT
      CAGTTGACGA CGGGTTTGGA AGGACCGTTG CACGTAGTTA CCCCACACGA

  +2  W  T  V  Y  H  G  A  G  T  R  T  I  A  S  P  K  G
2151  GGACTGTCTA CCACGGGGCC GGAACGAGGA CCATCGCGTC ACCCAAGGGT
      CCTGACAGAT GGTGCCCCGG CCTTGCTCCT GGTAGCGCAG TGGGTTCCCA

  -2  P  V  I  Q  M  Y  T  N  V  D  Q  D  L  V  G  W  P
2201  CCTGTCATCC AGATGTATAC CAATGTAGAC CAAGACCTTG TGGGCTGGCC
      GGACAGTAGG TCTACATATG GTTACATCTG GTTCTGGAAC ACCCGACCGG

  +2  A  S  Q  G  T  R  S  L  T  P  C  T  C  G  S  S
2251  CGCTTCGCAA GGTACCCGCT CATTGACACC CTGCACTTGC GGCTCCTCGG
      GCGAAGCGTT CCATGGGCGA GTAACTGTGG GACGTGAACG CCGAGGAGCC

  +2  D  L  Y  L  V  T  R  H  A  D  V  I  P  V  R  R  R
2301  ACCTTTACCT GGTCACGAGG CACGCCGATG TCATTCCCGT GCGCCGGCGG
      TGGAAATGGA CCAGTGCTCC GTGCGGCTAC AGTAAGGGCA CGCGGCCGCC

  +2  G  D  S  R  G  S  L  L  S  P  R  P  I  S  Y  L  K
2351  GGTGATAGCA GGGGCAGCCT GCTGTCGCCC CGGCCCATTT CCTACTTGAA
      CCACTATCGT CCCCGTCGGA CGACAGCGGG GCCGGGTAAA GGATGAACTT

  +2  G  S  S  G  G  P  L  L  C  P  A  G  H  A  V  G
2401  AGGCTCCTCG GGGGGTCCGC TGTTGTGCCC CGCGGGGCAC GCCGTGGGCA
      TCCGAGGAGC CCCCCAGGCG ACAACACGGG GCGCCCCGTG CGGCACCCGT

  +2  I  F  R  A  A  V  C  T  R  G  V  A  K  A  V  D  F
2451  TATTTAGGGC CGCGGTGTGC ACCCGTGGAG TGGCTAAGGC GGTGGACTTT
      ATAAATCCCG GCGCCACACG TGGGCACCTC ACCGATTCCG CCACCTGAAA

  +2  I  P  V  E  N  L  E  T  T  M  R  S  P  V  F  T  D
2501  ATCCCTGTGG AGAACCTAGA GACAACCATG AGGTCCCCGG TGTTCACGGA
      TAGGGACACC TCTTGGATCT CTGTTGGTAC TCCAGGGGCC ACAAGTGCCT
```

FIG. 9-3

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

pCMV-NS34A

```
   +2   N  S  S   P  P  V  V   P  Q  S   F  Q  V   A  H  L
2551  TAACTCCTCT CCACCAGTAG TGCCCCAGAG CTTCCAGGTG GCTCACCTCC
      ATTGAGGAGA GGTGGTCATC ACGGGGTCTC GAAGGTCCAC CGAGTGGAGG

   +2 H  A  P  T   G  S  G   K  S  T  K   V  P  A   A  Y  A
2601  ATGCTCCCAC AGGCAGCGGC AAAAGCACCA AGGTCCCGGC TGCATATGCA
      TACGAGGGTG TCCGTCGCCG TTTTCGTGGT TCCAGGGCCG ACGTATACGT

   +2  A  Q  G  Y   K  V  L   V  L  N   P  S  V  A   A  T  L
2651  GCTCAGGGCT ATAAGGTGCT AGTACTCAAC CCCTCTGTTG CTGCAACACT
      CGAGTCCCGA TATTCCACGA TCATGAGTTG GGGAGACAAC GACGTTGTGA

   +2   G  F  G   A  Y  M  S   K  A  H   G  I  D   P  N  I
2701  GGGCTTTGGT GCTTACATGT CCAAGGCTCA TGGGATCGAT CCTAACATCA
      CCCGAAACCA CGAATGTACA GGTTCCGAGT ACCCTAGCTA GGATTGTAGT

   +2 R  T  G  V   R  T  I   T  T  G  S   P  I  T   Y  S  T
2751  GGACCGGGGT GAGAACAATT ACCACTGGCA GCCCCATCAC GTACTCCACC
      CCTGGCCCCA CTCTTGTTAA TGGTGACCGT CGGGGTAGTG CATGAGGTGG

   +2  Y  G  K  F   L  A  D   G  G  C   S  G  G  A   Y  D  I
2801  TACGGCAAGT TCCTTGCCGA CGGCGGGTGC TCGGGGGGCG CTTATGACAT
      ATGCCGTTCA AGGAACGGCT GCCGCCCACG AGCCCCCCGC GAATACTGTA

   +2   I  I  C   D  E  C  H   S  T  D   A  T  S   I  L  G
2851  AATAATTTGT GACGAGTGCC ACTCCACGGA TGCCACATCC ATCTTGGGCA
      TTATTAAACA CTGCTCACGG TGAGGTGCCT ACGGTGTAGG TAGAACCCGT

   +2 I  G  T  V   L  D  Q   A  E  T  A   G  A  R   L  V  V
2901  TTGGCACTGT CCTTGACCAA GCAGAGACTG CGGGGGCGAG ACTGGTTGTG
      AACCGTGACA GGAACTGGTT CGTCTCTGAC GCCCCCGCTC TGACCAACAC

   +2  L  A  T  A   T  P  P   G  S  V   T  V  P  H   P  N  I
2951  CTCGCCACCG CCACCCCTCC GGGCTCCGTC ACTGTGCCCC ATCCCAACAT
      GAGCGGTGGC GGTGGGGAGG CCCGAGGCAG TGACACGGGG TAGGGTTGTA

   +2   E  E  V   A  L  S  T   T  G  E   I  P  F   Y  G  K
3001  CGAGGAGGTT GCTCTGTCCA CCACCGGAGA GATCCCTTTT TACGGCAAGG
      GCTCCTCCAA CGAGACAGGT GGTGGCCTCT CTAGGGAAAA ATGCCGTTCC

   +2 A  I  P  L   E  V  I   K  G  G  R   H  L  I   F  C  H
3051  CTATCCCCCT CGAAGTAATC AAGGGGGGGA GACATCTCAT CTTCTGTCAT
      GATAGGGGGA GCTTCATTAG TTCCCCCCCT CTGTAGAGTA GAAGACAGTA

   +2  S  K  K  K   C  D  E   L  A  A   K  L  V  A   L  G  I
3101  TCAAAGAAGA AGTGCGACGA ACTCGCCGCA AAGCTGGTCG CATTGGGCAT
      AGTTTCTTCT TCACGCTGCT TGAGCGGCGT TTCGACCAGC GTAACCCGTA

   +2   N  A  V   A  Y  Y  R   G  L  D   V  S  V   I  P  T
3151  CAATGCCGTG GCCTACTACC GCGGTCTTGA CGTGTCCGTC ATCCCGACCA
      GTTACGGCAC CGGATGATGG CGCCAGAACT GCACAGGCAG TAGGGCTGGT

   +2 S  G  D  V   V  V  V   A  T  D  A   L  M  T   G  Y  T
3201  GCGGCGATGT TGTCGTCGTG GCAACCGATG CCCTCATGAC CGGCTATACC
      CGCCGCTACA ACAGCAGCAC CGTTGGCTAC GGGAGTACTG GCCGATATGG
```

FIG. 9-4

OIPE JC13 DEC 0 2 2002 PATENT & TRADEMARK OFFICE

pCMV-NS34A

```
   +2  G  D  F  D   S  V  I   D  C  N   T  C  V  T   Q  T  V
3251  GGCGACTTCG ACTCGGTGAT AGACTGCAAT ACGTGTGTCA CCCAGACAGT
      CCGCTGAAGC TGAGCCACTA TCTGACGTTA TGCACACAGT GGGTCTGTCA

   +2   D  F  S   L  D  P  T   F  T  I   E  T  I   T  L  P
3301  CGATTTCAGC CTTGACCCTA CCTTCACCAT TGAGACAATC ACGCTCCCCC
      GCTAAAGTCG GAACTGGGAT GGAAGTGGTA ACTCTGTTAG TGCGAGGGGG

   +2 Q  D  A  V   S  R  T   Q  R  R  G   R  T  G   R  G  K
3351  AAGATGCTGT CTCCCGCACT CAACGTCGGG GCAGGACTGG CAGGGGGAAG
      TTCTACGAGA GAGGGCGTGA GTTGCAGCCC CGTCCTGACC GTCCCCCTTC

   +2  P  G  I  Y   R  F  V   A  P  G   E  R  P  S   G  M  F
3401  CCAGGCATCT ACAGATTTGT GGCACCGGGG GAGCGCCCCT CCGGCATGTT
      GGTCCGTAGA TGTCTAAACA CCGTGGCCCC CTCGCGGGGA GGCCGTACAA

   +2   D  S  S   V  L  C  E   C  Y  D   A  G  C   A  W  Y
3451  CGACTCGTCC GTCCTCTGTG AGTGCTATGA CGCAGGCTGT GCTTGGTATG
      GCTGAGCAGG CAGGAGACAC TCACGATACT GCGTCCGACA CGAACCATAC

   +2 E  L  T  P   A  E  T   T  V  R  L   R  A  Y   M  N  T
3501  AGCTCACGCC CGCCGAGACT ACAGTTAGGC TACGAGCGTA CATGAACACC
      TCGAGTGCGG GCGGCTCTGA TGTCAATCCG ATGCTCGCAT GTACTTGTGG

   +2  P  G  L  P   V  C  Q   D  H  L   E  F  W  E   G  V  F
3551  CCGGGGCTTC CCGTGTGCCA GGACCATCTT GAATTTTGGG AGGGCGTCTT
      GGCCCCGAAG GGCACACGGT CCTGGTAGAA CTTAAAACCC TCCCGCAGAA

   +2   T  G  L   T  H  I  D   A  H  F   L  S  Q   T  K  Q
          StuI
          ~~~~~~
3601  TACAGGCCTC ACTCATATAG ATGCCCACTT TCTATCCCAG ACAAAGCAGA
      ATGTCCGGAG TGAGTATATC TACGGGTGAA AGATAGGGTC TGTTTCGTCT

   +2 S  G  E  N   L  P  Y   L  V  A  Y   Q  A  T   V  C  A
3651  GTGGGGAGAA CCTTCCTTAC CTGGTAGCGT ACCAAGCCAC CGTGTGCGCT
      CACCCCTCTT GGAAGGAATG GACCATCGCA TGGTTCGGTG GCACACGCGA

   +2  R  A  Q  A   P  P  P   S  W  D   Q  M  W  K   C  L  I
3701  AGGGCTCAAG CCCCTCCCCC ATCGTGGGAC CAGATGTGGA AGTGTTTGAT
      TCCCGAGTTC GGGGAGGGGG TAGCACCCTG GTCTACACCT TCACAAACTA

   +2   R  L  K   P  T  L  H   G  P  T   P  L  L   Y  R  L
3751  TCGCCTCAAG CCCACCCTCC ATGGGCCAAC ACCCCTGCTA TACAGACTGG
      AGCGGAGTTC GGGTGGGAGG TACCCGGTTG TGGGGACGAT ATGTCTGACC

   +2 G  A  V  Q   N  E  I   T  L  T  H   P  V  T   K  Y  I
3801  GCGCTGTTCA GAATGAAATC ACCCTGACGC ACCCAGTCAC CAAATACATC
      CGCGACAAGT CTTACTTTAG TGGGACTGCG TGGGTCAGTG GTTTATGTAG

   +2  M  T  C  M   S  A  D   L  E  V   V  T  S  T   W  V  L
3851  ATGACATGCA TGTCGGCCGA CCTGGAGGTC GTCACGAGCA CCTGGGTGCT
      TACTGTACGT ACAGCCGGCT GGACCTCCAG CAGTGCTCGT GGACCCACGA

   +2   V  G  G   V  L  A  A   L  A  A   Y  C  L   S  T  G
3901  CGTTGGCGGC GTCCTGGCTG CTTTGGCCGC GTATTGCCTG TCAACAGGCT
      GCAACCGCCG CAGGACCGAC GAAACCGGCG CATAACGGAC AGTTGTCCGA
```

FIG. 9-5

OIPE JC18
DEC 02 2002
PATENT & TRADEMARK OFFICE

pCMV-NS34A

```
   +2 C  V  V  I   V  G  R   V  V  L  S   G  K  P   A  I  I
3951  GCGTGGTCAT AGTGGGCAGG GTCGTCTTGT CCGGGAAGCC GGCAATCATA
      CGCACCAGTA TCACCCGTCC CAGCAGAACA GGCCCTTCGG CCGTTAGTAT

   +2  P  D  R  E   V  L  Y   R  E  F   D  E  M  E   E  C
4001  CCTGACAGGG AAGTCCTCTA CCGAGAGTTC GATGAGATGG AAGAGTGCTA
      GGACTGTCCC TTCAGGAGAT GGCTCTCAAG CTACTCTACC TTCTCACGAT

        BamHI      MluI
        ~~~~~~    ~~~~~~~
4051  GGATCCACTA CGCGTTAGAG CTCGCTGATC AGCCTCGACT GTGCCTTCTA
      CCTAGGTGAT GCGCAATCTC GAGCGACTAG TCGGAGCTGA CACGGAAGAT

4101  GTTGCCAGCC ATCTGTTGTT TGCCCCTCCC CCGTGCCTTC CTTGACCCTG
      CAACGGTCGG TAGACAACAA ACGGGGAGGG GGCACGGAAG GAACTGGGAC

4151  GAAGGTGCCA CTCCCACTGT CCTTTCCTAA TAAAATGAGG AAATTGCATC
      CTTCCACGGT GAGGGTGACA GGAAAGGATT ATTTTACTCC TTTAACGTAG

4201  GCATTGTCTG AGTAGGTGTC ATTCTATTCT GGGGGGTGGG GTGGGGCAGG
      CGTAACAGAC TCATCCACAG TAAGATAAGA CCCCCCACCC CACCCCGTCC

4251  ACAGCAAGGG GGAGGATTGG GAAGACAATA GCAGGCATGC TGGGGAGCTC
      TGTCGTTCCC CCTCCTAACC CTTCTGTTAT CGTCCGTACG ACCCCTCGAG

4301  TTCCGCTTCC TCGCTCACTG ACTCGCTGCG CTCGGTCGTT CGGCTGCGGC
      AAGGCGAAGG AGCGAGTGAC TGAGCGACGC GAGCCAGCAA GCCGACGCCG

4351  GAGCGGTATC AGCTCACTCA AAGGCGGTAA TACGGTTATC CACAGAATCA
      CTCGCCATAG TCGAGTGAGT TTCCGCCATT ATGCCAATAG GTGTCTTAGT

4401  GGGGATAACG CAGGAAAGAA CATGTGAGCA AAAGGCCAGC AAAAGGCCAG
      CCCCTATTGC GTCCTTTCTT GTACACTCGT TTTCCGGTCG TTTTCCGGTC

4451  GAACCGTAAA AAGGCCGCGT TGCTGGCGTT TTTCCATAGG CTCCGCCCCC
      CTTGGCATTT TTCCGGCGCA ACGACCGCAA AAAGGTATCC GAGGCGGGGG

4501  CTGACGAGCA TCACAAAAAT CGACGCTCAA GTCAGAGGTG GCGAAACCCG
      GACTGCTCGT AGTGTTTTTA GCTGCGAGTT CAGTCTCCAC CGCTTTGGGC

4551  ACAGGACTAT AAAGATACCA GGCGTTTCCC CCTGGAAGCT CCCTCGTGCG
      TGTCCTGATA TTTCTATGGT CCGCAAAGGG GGACCTTCGA GGGAGCACGC

4601  CTCTCCTGTT CCGACCCTGC CGCTTACCGG ATACCTGTCC GCCTTTCTCC
      GAGAGGACAA GGCTGGGACG GCGAATGGCC TATGGACAGG CGGAAAGAGG

4651  CTTCGGGAAG CGTGGCGCTT TCTCAATGCT CACGCTGTAG GTATCTCAGT
      GAAGCCCTTC GCACCGCGAA AGAGTTACGA GTGCGACATC CATAGAGTCA

4701  TCGGTGTAGG TCGTTCGCTC CAAGCTGGGC TGTGTGCACG AACCCCCCGT
      AGCCACATCC AGCAAGCGAG GTTCGACCCG ACACACGTGC TTGGGGGGCA

4751  TCAGCCCGAC CGCTGCGCCT TATCCGGTAA CTATCGTCTT GAGTCCAACC
      AGTCGGGCTG GCGACGCGGA ATAGGCCATT GATAGCAGAA CTCAGGTTGG

4801  CGGTAAGACA CGACTTATCG CCACTGGCAG CAGCCACTGG TAACAGGATT
      GCCATTCTGT GCTGAATAGC GGTGACCGTC GTCGGTGACC ATTGTCCTAA
```

FIG. 9-6

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

pCMV-NS34A

```
4851  AGCAGAGCGA GGTATGTAGG CGGTGCTACA GAGTTCTTGA AGTGGTGGCC
      TCGTCTCGCT CCATACATCC GCCACGATGT CTCAAGAACT TCACCACCGG

4901  TAACTACGGC TACACTAGAA GGACAGTATT TGGTATCTGC GCTCTGCTGA
      ATTGATGCCG ATGTGATCTT CCTGTCATAA ACCATAGACG CGAGACGACT

4951  AGCCAGTTAC CTTCGGAAAA AGAGTTGGTA GCTCTTGATC CGGCAAACAA
      TCGGTCAATG GAAGCCTTTT TCTCAACCAT CGAGAACTAG GCCGTTTGTT

5001  ACCACCGCTG GTAGCGGTGG TTTTTTTGTT TGCAAGCAGC AGATTACGCG
      TGGTGGCGAC CATCGCCACC AAAAAAACAA ACGTTCGTCG TCTAATGCGC

5051  CAGAAAAAAA GGATCTCAAG AAGATCCTTT GATCTTTTCT ACGGGGTCTG
      GTCTTTTTTT CCTAGAGTTC TTCTAGGAAA CTAGAAAAGA TGCCCCAGAC

5101  ACGCTCAGTG GAACGAAAAC TCACGTTAAG GGATTTTGGT CATGAGATTA
      TGCGAGTCAC CTTGCTTTTG AGTGCAATTC CCTAAAACCA GTACTCTAAT

5151  TCAAAAAGGA TCTTCACCTA GATCCTTTTA AATTAAAAAT GAAGTTTTAA
      AGTTTTTCCT AGAAGTGGAT CTAGGAAAAT TTAATTTTTA CTTCAAAATT

5201  ATCAATCTAA AGTATATATG AGTAAACTTG GTCTGACAGT TACCAATGCT
      TAGTTAGATT TCATATATAC TCATTTGAAC CAGACTGTCA ATGGTTACGA

5251  TAATCAGTGA GGCACCTATC TCAGCGATCT GTCTATTTCG TTCATCCATA
      ATTAGTCACT CCGTGGATAG AGTCGCTAGA CAGATAAAGC AAGTAGGTAT

5301  GTTGCCTGAC TCCCCGTCGT GTAGATAACT ACGATACGGG AGGGCTTACC
      CAACGGACTG AGGGGCAGCA CATCTATTGA TGCTATGCCC TCCCGAATGG

5351  ATCTGGCCCC AGTGCTGCAA TGATACCGCG AGACCCACGC TCACCGGCTC
      TAGACCGGGG TCACGACGTT ACTATGGCGC TCTGGGTGCG AGTGGCCGAG

5401  CAGATTTATC AGCAATAAAC CAGCCAGCCG GAAGGGCCGA GCGCAGAAGT
      GTCTAAATAG TCGTTATTTG GTCGGTCGGC CTTCCCGGCT CGCGTCTTCA

5451  GGTCCTGCAA CTTTATCCGC CTCCATCCAG TCTATTAATT GTTGCCGGGA
      CCAGGACGTT GAAATAGGCG GAGGTAGGTC AGATAATTAA CAACGGCCCT

5501  AGCTAGAGTA AGTAGTTCGC CAGTTAATAG TTTGCGCAAC GTTGTTGCCA
      TCGATCTCAT TCATCAAGCG GTCAATTATC AAACGCGTTG CAACAACGGT

5551  TTGCTACAGG CATCGTGGTG TCACGCTCGT CGTTTGGTAT GGCTTCATTC
      AACGATGTCC GTAGCACCAC AGTGCGAGCA GCAAACCATA CCGAAGTAAG

5601  AGCTCCGGTT CCCAACGATC AAGGCGAGTT ACATGATCCC CCATGTTGTG
      TCGAGGCCAA GGGTTGCTAG TTCCGCTCAA TGTACTAGGG GGTACAACAC

5651  CAAAAAAGCG GTTAGCTCCT TCGGTCCTCC GATCGTTGTC AGAAGTAAGT
      GTTTTTTCGC CAATCGAGGA AGCCAGGAGG CTAGCAACAG TCTTCATTCA

5701  TGGCCGCAGT GTTATCACTC ATGGTTATGG CAGCACTGCA TAATTCTCTT
      ACCGGCGTCA CAATAGTGAG TACCAATACC GTCGTGACGT ATTAAGAGAA

5751  ACTGTCATGC CATCCGTAAG ATGCTTTTCT GTGACTGGTG AGTACTCAAC
      TGACAGTACG GTAGGCATTC TACGAAAAGA CACTGACCAC TCATGAGTTG
```

FIG. 9-7

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

pCMV-NS34A

```
5801  CAAGTCATTC TGAGAATAGT GTATGCGGCG ACCGAGTTGC TCTTGCCCGG
      GTTCAGTAAG ACTCTTATCA CATACGCCGC TGGCTCAACG AGAACGGGCC

5851  CGTCAATACG GGATAATACC GCGCCACATA GCAGAACTTT AAAAGTGCTC
      GCAGTTATGC CCTATTATGG CGCGGTGTAT CGTCTTGAAA TTTTCACGAG

5901  ATCATTGGAA AACGTTCTTC GGGGCGAAAA CTCTCAAGGA TCTTACCGCT
      TAGTAACCTT TTGCAAGAAG CCCCGCTTTT GAGAGTTCCT AGAATGGCGA

5951  GTTGAGATCC AGTTCGATGT AACCCACTCG TGCACCCAAC TGATCTTCAG
      CAACTCTAGG TCAAGCTACA TTGGGTGAGC ACGTGGGTTG ACTAGAAGTC

6001  CATCTTTTAC TTTCACCAGC GTTTCTGGGT GAGCAAAAAC AGGAAGGCAA
      GTAGAAAATG AAAGTGGTCG CAAAGACCCA CTCGTTTTTG TCCTTCCGTT

6051  AATGCCGCAA AAAAGGGAAT AAGGGCGACA CGGAAATGTT GAATACTCAT
      TTACGGCGTT TTTTCCCTTA TTCCCGCTGT GCCTTTACAA CTTATGAGTA

6101  ACTCTTCCTT TTTCAATATT ATTGAAGCAT TTATCAGGGT TATTGTCTCA
      TGAGAAGGAA AAAGTTATAA TAACTTCGTA AATAGTCCCA ATAACAGAGT

6151  TGAGCGGATA CATATTTGAA TGTATTTAGA AAAATAAACA AATAGGGGTT
      ACTCGCCTAT GTATAAACTT ACATAAATCT TTTTATTTGT TTATCCCCAA

6201  CCGCGCACAT TTCCCCGAAA AGTGCCACCT GACGTCTAAG AAACCATTAT
      GGCGCGTGTA AAGGGGCTTT TCACGGTGGA CTGCAGATTC TTTGGTAATA

6251  TATCATGACA TTAACCTATA AAAATAGGCG TATCACGAGG CCCTTTCGTC
      ATAGTACTGT AATTGGATAT TTTTATCCGC ATAGTGCTCC GGGAAAGCAG
```

FIG. 9-8

PATENT & TRADEMARK OFFICE
DEC 0 2 2002
OIPE
JC13

Diagram 1

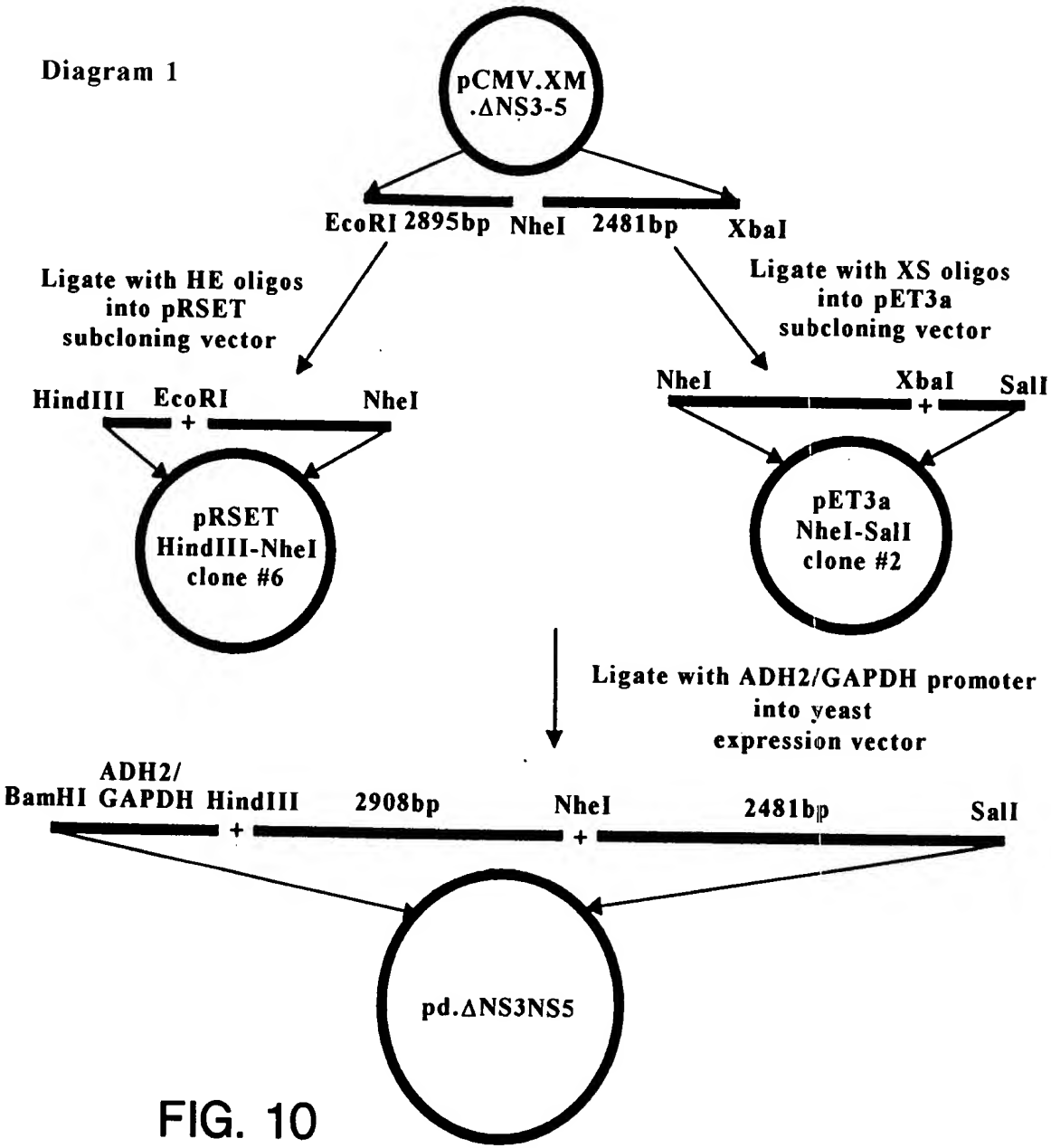

FIG. 10

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
                                MetAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuVal
  2 AGCTTACAAAACAAATTCACCATGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTA
    TCGAATGTTTTGTTTAAGTGGTACCGACGTATACGTCGAGTCCCGATATTCCACGATCAT
    ^               ^       ^                                   ^
    1 HIND3, 21 NCOI, 30 NDEI, 58 SCAI,

    LeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGly
 62 CTCAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGG
    GAGTTGGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCC

    IleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyr
122 ATCGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTAC
    TAGCTAGGATTGTAGTCCTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGCATG
    ^
    122 CLAI,

    SerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIle
182 TCCACCTACGGCAAGTTCCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGACATAATA
    AGGTGGATGCCGTTCAAGGAACGGCTGCCGCCCACGAGCCCCCCGCGAATACTGTATTAT

    IleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeu
242 ATTTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATTGGCACTGTCCTT
    TAAACACTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTGACAGGAA

    AspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGly
302 GACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGC
    CTGGTTCGTCTCTGACGCCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCCG
        ^
    309 ALWN1,

    SerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIle
362 TCCGTCACTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATC
    AGGCAGTGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCTCTCTAG

    ProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePhe
422 CCTTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTTC
    GGAAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCCTCTGTAGAGTAGAAG

    CysHisSerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsn
482 TGTCATTCAAAGAAGAAGTGCGACGAACTCGCCGCAAAGCTGGTCGCATTGGGCATCAAT
    ACAGTAAGTTTCTTCTTCACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCGTAGTTA

    AlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValVal
542 GCCGTGGCCTACTACCGCGGTCTTGACGTGTCCGTCATCCCGACCAGCGGCGATGTTGTC
    CGGCACCGGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCTACAACAG
                ^           ^
    556 SAC2, 566 DRD1,

    ValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAsp
602 GTCGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGAC
    CAGCACCGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTG
                          ^
    621 BSPH1,

    CysAsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGlu
```

FIG. 11-1

OIPE
DEC 0 2 2002
PATENT & TRADEMARK OFFICE
JC13

```
662  TGCAATACGTGTGTCACCCAGACAGTCGATTTCAGCCTTGACCCTACCTTCACCATTGAG
     ACGTTATGCACACAGTGGGTCTGTCAGCTAAAGTCGGAACTGGGATGGAAGTGGTAACTC

     ThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArg
722  ACAATCACGCTCCCCCAAGATGCTGTCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGG
     TGTTAGTGCGAGGGGGTTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGACCGTCC

     GlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAsp
782  GGGAAGCCAGGCATCTACAGATTTGTGGCACCGGGGGAGCGCCCCTCCGGCATGTTCGAC
     CCCTTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTG
                                                  ^           ^

     822 BGLI, 839 DRD1,

     SerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAla
842  TCGTCCGTCCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCCGCC
     AGCAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCGGGCGG
                                                  ^

     887 SACI,

     GluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAsp
902  GAGACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGAC
     CTCTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACGGTCCTG
                                                  ^

     937 SMAI XMAI,

     HisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeu
962  CATCTTGAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCACTTTCTA
     GTAGAACTTAAAACCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAAGAT
                                      ^

     991 STUI,

     SerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrVal
1022 TCCCAGACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGGTAGCGTACCAAGCCACCGTG
     AGGGTCTGTTTCGTCTCACCCCTCTTGGAAGGAATGGACCATCGCATGGTTCGGTGGCAC
                                                  ^

     1075 DRA3,

     CysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArg
1082 TGCGCTAGGGCTCAAGCCCCTCCCCCATCGTGGGACCAGATGTGGAAGTGTTTGATTCGC
     ACGCGATCCCGAGTTCGGGGAGGGGGTAGCACCCTGGTCTACACCTTCACAAACTAAGCG

     LeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsn
1142 CTCAAGCCCACCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTCAGAAT
     GAGTTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTA
                  ^

     1156 NCOI,

     GluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeu
1202 GAAATCACCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTCGGCCGACCTG
     CTTTAGTGGGACTGCGTGGGTCAGTGGTTTATGTAGTACTGTACGTACAGCCGGCTGGAC
                                      ^   ^   ^       ^   ^

     1236 BSPH1, 1240 DRD1, 1243 AVA3, 1251 EAG1 XMA3, 1256 DRD1,

     GluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyr
1262 GAGGTCGTCACGAGCACCTGGGTGCTCGTTGGCGGCGTCCTGGCTGCTTTGGCCGCGTAT
     CTCCAGCAGTGCTCGTGGACCCACGAGCAACCGCCGCAGGACCGACGAAACCGGCGCATA
```

FIG. 11-2

OIPE JC13 DEC 0 2 2002 PATENT & TRADEMARK OFFICE

```
      CysLeuSerThrGlyCysValValIleValGlyArgValValL uSerGlyLysPr Ala
1322  TGCCTGTCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGTCCGGGAAGCCGGCA
      ACGGACAGTTGTCCGACGCACCAGTATCACCCGTCCCAGCAGAACAGGCCCTTCGGCCGT
                                                               ^

      1375 NAEI,

      IleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGln
1382  ATCATACCTGACAGGGAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAG
      TAGTATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCACGAGAGTC
            ^

      1391 DRD1,

      HisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeu
1442  CACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTC
      GTGAATGGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCCGGGAG

      GlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsn
1502  GGCCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAGACCAAC
      CCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTG
            ^     ^

      1508 PSTI, 1513 TTH3I,

      TrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGln
1562  TGGCAAAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACTTCATCAGTGGGATACAA
      ACCGTTTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCCTATGTT
            ^                       ^

      1571 XHOI, 1592 NDEI,

      TyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPhe
1622  TACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTT
      ATGAACCGCCCGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAACTACCGAAAA
                                  ^

      1649 BSTE2,

      ThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGly
1682  ACAGCTGCTGTCACCAGCCCACTAACCACTAGCCAAACCCTCCTCTTCAACATATTGGGG
      TGTCGACGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATAACCCC
       ^

      1683 ALWN1 PVU2,

      GlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGly
1742  GGGTGGGTGGCTGCCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTGGGCGCTGGC
      CCCACCCACCGACGGGTCGAGCGGCGGGGGCCACGGCGATGACGGAAACACCCGCGACCG
                                                               ^

      1800 ESP1,

      LeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAla
1802  TTAGCTGGCGCCGCCATCGGCAGTGTTGGACTGGGGAAGGTCCTCATAGACATCCTTGCA
      AATCGACCGCGGCGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGT
            ^

      1808 KAS1 NARI,

      GlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluVal
1862  GGGTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTC
      CCCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAG
                                  ^                 ^
```

FIG. 11-3

OIPE JC14
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
        1884 SACI, 1905 BSPH1,

             ProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaL uVal
1922         CCCTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTA
             GGGAGGTGCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGGAGCAT
                      ^

        1934 TTH3I,

             ValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaVal
1982         GTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTG
             CAGCCGCACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCCGCTCCCCCGTCAC
                                      ^              ^

        2010 NAEI, 2023 SMAI XMAI,

             GlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHis
2042         CAGTGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCCCACGCAC
             GTCACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCGTG
                                           ^                          ^

        2073 SMAI XMAI, 2099 DRA3,

             TyrValProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrVal
2102         TACGTGCCGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTA
             ATGCACGGCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGTCGGAGTGACAT
                               ^

        2121 PVU2,

             ThrGlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSer
2162         ACCCAGCTCCTGAGGCGACTGCACCAGTGGATAAGCTCGGAGTGTACCACTCCATGCTCC
             TGGGTCGAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGTGAGGTACGAGG
                ^    ^

        2165 ALWN1, 2170 MST2,

             GlySerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThr
2222         GGTTCCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACC
             CCAAGGACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACTCGCTGAAATTCTGG
                 ^

        2226 ECON1,

             TrpLeuLysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArg
2282         TGGCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCCTGCCAGCGC
             ACCGATTTTCGATTCGAGTACGGTGTCGACGGACCCTAGGGGAAACACAGGACGGTCGCG
                      ^              ^           ^

        2291 ESP1, 2306 PVU2, 2316 BAMHI,

             GlyTyrLysGlyValTrpArgGlyAspGlyIleMetHisThrArgCysHisCysGlyAla
2342         GGGTATAAGGGGGTCTGGCGAGGGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCT
             CCCATATTCCCCCAGACCGCTCCCCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGA

             GluIleThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArg
2402         GAGATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCCTAGGACCTGCAGG
             CTCTAGTGACCTGTACAGTTTTTGCCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCC
                                           ^              ^       ^^

        2431 BSAB1, 2447 AVR2, 2454 SSE83871, 2455 PSTI,

             AsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyPr CysThrProLeu
2462         AACATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCTGTACCCCCCTT
             TTGTACACCTCACCCTGGAAGGGGTAATTACGGATGTGGTGCCCGGGGACATGGGGGGAA
```

FIG. 11-4

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
      2486 ASE1, 2503 APAI,

      ProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIle
2522  CCTGCGCCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATACGTGGAGATA
      GGACGCGGCTTGATGTGCAAGCGCGATACCTCCCACAGACGTCTCCTTATGCACCTCTAT
                                                  ^

      2559 PSTI,

      ArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysPro
2582  AGGCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTTAAATGCCCG
      TCCGTCCACCCCCTGAAGGTGATGCACTGCCCATACTGATGACTGTTAGAATTTACGGGC
                        ^

      2600 DRA3,

      CysGlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPhe
2642  TGCCAGGTCCCATCGCCCGAATTTTTCACAGAATTGGACGGGGTGCGCCTACATAGGTTT
      ACGGTCCAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAAA

      AlaProProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGlu
2702  GCGCCCCCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTCAGAGTAGGACTCCACGAA
      CGCGGGGGGACGTTCGGGAACGACGCCCTCCTCCATAGTAAGTCTCATCCTGAGGTGCTT

      TyrProValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSer
2762  TACCCGGTAGGGTCGCAATTACCTTGCGAGCCCGAACCGGACGTGGCCGTGTTGACGTCC
      ATGGGCCATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGCACAACTGCAGG
       ^                                                        ^

      2763 HGIE2, 2815 AAT2,

      MetLeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGly
2822  ATGCTCACTGATCCCTCCCATATAACAGCAGAGGCGGCCGGGCGAAGGTTGGCGAGGGGA
      TACGAGTGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCCGCTTCCAACCGCTCCCCT
                                              ^

      2856 EAG1 XMA3,

      SerProProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAla
2882  TCACCCCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCA
      AGTGGGGGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGT
                  ^               ^

      2895 BALI, 2909 NHEI,

      ThrCysThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrp
2942  ACTTGCACCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGG
      TGAACGTGGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACC
                                          ^  ^

      2972 ESP1, 2975 SACI,

      ArgGlnGluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeu
3002  AGGCAGGAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTG
      TCCGTCCTCTACCCGCCGTTGTAGTGGTCCCAACTCAGTCTTTTGTTTCACCACTAAGAC

      AspSerPheAspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGlu
3062  GACTCCTTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAA
      CTGAGGAAGCTAGGCGAACACCGCCTCCTCCTGCTCGCCCTCTAGAGGCATGGGCGTCTT
                                                  ^

      3102 BGL2,
```

FIG. 11-5

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
      IleLeuArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyr
3122  ATCCTGCGGAAGTCTCGGAGATTCGCCCAGGCCCTGCCCGTTTGGGCGCGGCCGGACTAT
      TAGGACGCCTTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAACCCGCGCCGGCCTGATA
                                    ^                 ^

      3149 ALWN1, 3170 EAG1 XMA3,

      AsnProProLeuValGluThrTrpLysLysProAspTyrGluProProValValHisGly
3182  AACCCCCCGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACCACCTGTGGTCCATGGC
      TTGGGGGGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGACACCAGGTACCG
                                                ^         ^

      3223 HGIE2, 3235 NCOI,

      CysProLeuProProProLysSerProProValProProProArgLysLysArgThrVal
3242  TGCCCGCTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCCTCGGAAGAAGCGGACGGTG
      ACGGGCGAAGGTGGAGGTTTCAGGGGAGGACACGGAGGCGGAGCCTTCTTCGCCTGCCAC

      ValLeuThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGly
3302  GTCCTCACTGAATCAACCCTATCTACTGCCTTGGCCGAGCTCGCCACCAGAAGCTTTGGC
      CAGGAGTGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCG
                                          ^         ^

      3338 SACI, 3352 HIND3,

      SerSerSerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGluProAlaPro
3362  AGCTCCTCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCGCCCCT
      TCGAGGAGTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGA

      SerGlyCysProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGly
3422  TCTGGCTGCCCCCCCGACTCCGACGCTGAGTCCTATTCCTCCATGCCCCCCCTGGAGGGG
      AGACCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCC
                              ^

      3443 EAM11051,

      GluProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsn
3482  GAGCCTGGGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCAGTAGTGAGGCCAAC
      CTCGGACCCCTAGGCCTAGAATCGCTGCCCAGTACCAGTTGCCAGTCATCACTCCGGTTG
            ^^ ^

      3490 BAMHI, 3491 BSAB1, 3493 BSPE1,

      AlaGluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrPro
3542  GCGGAGGATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCACTCGTCACCCCG
      CGCCTCCTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGC
                                                      ^

      3595 DRA3,

      CysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHis
3602  TGCGCCGCGGAAGAACAGAAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTCAC
      ACGCGGCGCCTTCTTGTCTTTGACGGGTAGTTACGTGATTCGTTGAGCAACGATGCAGTG
          ^           ^                                         ^

      3606 SAC2, 3617 ALWN1, 3661 PFLM1,

      HisAsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThr
3662  CACAATTTGGTGTATTCCACCACCTCACGCAGTGCTTGCCAAAGGCAGAAGAAAGTCACA
      GTGTTAAACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGTCTTCTTTCAGTGT
                                    ^

      3687 DRA3,

      PheAspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAla
```

FIG. 11-6

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
3722  TTTGACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAGGTTAAAGCA
      AAACTGTCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCCTCCAATTTCGT

      AlaAlaSerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSerLeuThrPro
3782  GCGGCGTCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGCAGCCTGACGCCC
      CGCCGCAGTTTTCACTTCCGATTGAACGATAGGCATCTCCTTCGAACGTCGGACTGCGGG
                                                        ^

      3822 HIND3,

      ProHisSerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCysHisAlaArg
3842  CCACACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTTGCCATGCCAGA
      GGTGTGAGTCGGTTTAGGTTCAAACCAATACCCCGTTTTCTGCAGGCAACGGTACGGTCT
                                                  ^           ^

      3881 AAT2, 3896 BGLI,

      LysAlaValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsnValThrPro
3902  AAGGCCGTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACAATGTAACACCA
      TTCCGGCATTGGGTGTAGTTGAGGCACACCTTTCTGGAAGACCTTCTGTTACATTGTGGT

      IleAspThrThrIleMetAlaLysAsnGluValPheCysValGlnProGluLysGlyGly
3962  ATAGACACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTCAGCCTGAGAAGGGGGGT
      TATCTGTGATGGTAGTACCGATTCTTGCTCCAAAAGACGCAAGTCGGACTCTTCCCCCCA

      ArgLysProAlaArgLeuIleValPheProAspLeuGlyValArgValCysGluLysMet
4022  CGTAAGCCAGCTCGTCTCATCGTGTTCCCCGATCTGGGCGTGCGCGTGTGCGAAAAGATG
      GCATTCGGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACACGCTTTTCTAC

      AlaLeuTyrAspValValThrLysLeuProLeuAlaValMetGlySerSerTyrGlyPhe
4082  GCTTTGTACGACGTGGTTACAAAGCTCCCCTTGGCCGTGATGGGAAGCTCCTACGGATTC
      CGAAACATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCCTTCGAGGATGCCTAAG

      GlnTyrSerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSerLysLysThr
4142  CAATACTCACCAGGACAGCGGGTTGAATTCCTCGTGCAAGCGTGGAAGTCCAAGAAAACC
      GTTATGAGTGGTCCTGTCGCCCAACTTAAGGAGCACGTTCGCACCTTCAGGTTCTTTTGG
                                ^

      4166 ECORI,

      ProMetGlyPheSerTyrAspThrArgCysPheAspSerThrValThrGluSerAspIle
4202  CCAATGGGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATC
      GGTTACCCCAAGAGCATACTATGGGCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAG
                                              ^     ^

      4235 DRD1, 4242 ALWN1,

      ArgThrGluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArgValAlaIle
4262  CGTACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGCGTGGCCATC
      GCATGCCTCCTCCGTTAGATGGTTACAACACTGGAGCTGGGGGTTCGGGCGCACCGGTAG
                                                        ^     ^

      4307 BGLI, 4314 BALI,

      LysSerLeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArgGlyGluAsn
4322  AAGTCCCTCACCGAGAGGCTTTATGTTGGGGGCCCTCTTACCAATTCAAGGGGGGAGAAC
      TTCAGGGAGTGGCTCTCCGAAATACAACCCCCGGGAGAATGGTTAAGTTCCCCCCTCTTG
                                          ^

      4351 APAI,

      CysGlyTyrArgArgCysArgAlaS rGlyValLeuThrThrSerCysGlyAsnThrLeu
4382  TGCGGCTATCGCAGGTGCCGCGCGAGCGGCGTACTGACAACTAGCTGTGGTAACACCCTC
```

FIG. 11-7

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
      ACGCCGATAGCGTCCACGGCGCGCTCGCCGCATGACTGTTGATCGACACCATTGTGGGAG

      ThrCysTyrIl LysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMet
4442  ACTTGCTACATCAAGGCCCGGGCAGCCTGTCGAGCCGCAGGGCTCCAGGACTGCACCATG
      TGAACGATGTAGTTCCGGGCCCGTCGGACAGCTCGGCGTCCCGAGGTCCTGACGTGGTAC
                        ^
      4458 SMAI XMAI,

      LeuValCysGlyAspAspLeuValValIleCysGluSerAlaGlyValGlnGluAspAla
4502  CTCGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCG
      GAGCACACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCCAGGTCCTCCTGCGC
                  ^  ^
      4514 DRD1, 4517 TTH3I,

      AlaSerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProProGlyAspPro
4562  GCGAGCCTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCCCCTGGGGACCCC
      CGCTCGGACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGCGGGGGGGACCCCTGGGG

      ProGlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnValSerValAla
4622  CCACAACCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCCAACGTGTCAGTCGCC
      GGTGTTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGG
                           ^
      4643 SACI,

      HisAspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAla
4682  CACGACGGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCTACAACCCCCCTCGCG
      GTGCTGCCGCGACCTTTCTCCCAGATGATGGAGTGGGCACTGGGATGTTGGGGGGAGCGC
                                                              ^
      4737 NRUI,

      ArgAlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIle
4742  AGAGCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATC
      TCTCGACGCACCCTCTGTCGTTCTGTGTGAGGTCAGTTAAGGACCGATCCGTTGTATTAG

      MetPheAlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeu
4802  ATGTTTGCCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCCTT
      TACAAACGGGGGTGTGACACCCGCTCCTACTATGACTACTGGGTAAAGAAATCGCAGGAA
               ^^
      4812 PFLM1, 4813 DRA3,

      IleAlaArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSer
4862  ATAGCCAGGGACCAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCC
      TATCGGTCCCTGGTCGAACTTGTCCGGGAGCTAACGCTCTAGATGCCCCGGACGATGAGG
                                                  ^
      4899 BGL2,

      IleGluProLeuAspLeuProProIleIleGlnArgLeuHisGlyLeuSerAlaPheSer
4922  ATAGAACCACTGGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTTCA
      TATCTTGGTGACCTAGATGGAGGTTAGTAAGTTTCTGAGGTACCGGAGTCGCGTAAAAGT
                                                  ^
      4960 NCOI,

      LeuHisSerTyrSerPr GlyGluIleAsnArgValAlaAlaCysLeuArgLysLeuGly
4982  CTCCACAGTTACTCTCCAGGTGAAATCAATAGGGTGGCCGCATGCCTCAGAAAACTTGGG
      GAGGTGTCAATGAGAGGTCCACTTTAGTTATCCCACCGGCGTACGGAGTCTTTTGAACCC
                                                  ^              ^
      5021 SPHI, 5041 KPNI,
```

FIG. 11-8

OIPE
DEC 0 2 2002
PATENT & TRADEMARK OFFICE
JC13

```
      ValProProLeuArgAlaTrpArgHisArgAlaArgSerValArgAlaArgLeuLeuAla
5042  GTACCGCCCTTGCGAGCTTGGAGACACCGGGCCCGGAGCGTCCGCGCTAGGCTTCTGGCC
      CATGGCGGGAACGCTCGAACCTCTGTGGCCCGGGCCTCGCAGGCGCGATCCGAAGACCGG
                                  ^                             ^

      5070 APAI, 5097 BALI,

      ArgGlyGlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrpAlaValArgThrLys
5102  AGAGGAGGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGCAGTAAGAACAAAG
      TCTCCTCCGTCCCGACGGTATACACCGTTCATGGAGAAGTTGACCCGTCATTCTTGTTTC
                        ^

      5119 NDEI,

      LeuLysLeuThrProIleAlaAlaAlaGlyGlnLeuAspLeuSerGlyTrpPheThrAla
5162  CTCAAACTCACTCCAATAGCGGCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTCACGGCT
      GAGTTTGAGTGAGGTTATCGCCGGCGACCGGTCGACCTGAACAGGCCGACCAAGTGCCGA
                        ^^       ^   ^

      5180 NOTI, 5181 EAG1 XMA3, 5188 BALI, 5192 PVU2,

      GlyTyrSerGlyGlyAspIleTyrHisSerValSerHisAlaArgProArgTrpIleTrp
5222  GGCTACAGCGGGGGAGACATTTATCACAGCGTGTCTCATGCCCGGCCCCGCTGGATCTGG
      CCGATGTCGCCCCCTCTGTAAATAGTGTCGCACAGAGTACGGGCCGGGGCGACCTAGACC
                             ^

      5246 DRA3,

      PheCysLeuLeuLeuLeuAlaAlaGlyValGlyIleTyrLeuLeuProAsnArgOP
5282  TTTTGCCTACTCCTGCTTGCTGCAGGGGTAGGCATCTACCTCCTCCCCAACCGATGAAGG
      AAAACGGATGAGGACGAACGACGTCCCCATCCGTAGATGGAGGAGGGGTTGGCTACTTCC
                          ^                               ^

      5301 PSTI, 5331 HGIE2,


5342  TTGGGGTAAACACTCCGGCCTAAAAAAAAAAAAAAAATCTAGAACCCGAGTCGAC
      AACCCCATTTGTGAGGCCGGATTTTTTTTTTTTTTTAGATCTTGGGCTCAGCTG
                                          ^           ^

      5378 XBAI, 5390 SALI,
```

FIG. 11-9

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE

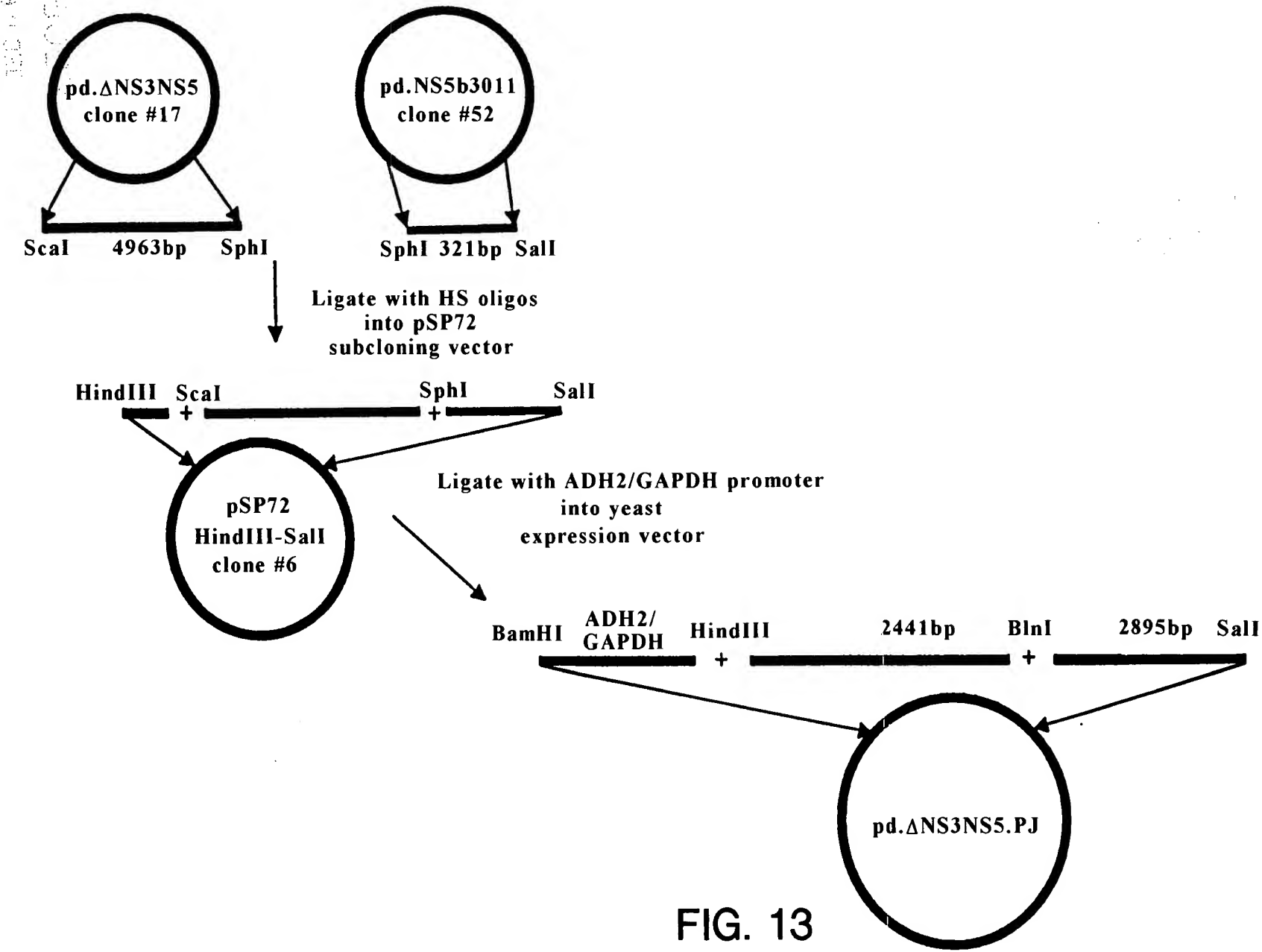

FIG. 13

OIPE
DEC 0 2 2002
PATENT & TRADEMARK OFFICE
JC13

```
                    MetAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsn
  2 AGCTTACAAAACAAAATGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTCAAC
    TCGAATGTTTTGTTTTACCGACGTATACGTCGAGTCCCGATATTCCACGATCATGAGTTG
    ^                   ^                                  ^
    1 HIND3, 24 NDEI, 52 SCAI,

    ProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAsp
 62 CCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGATCGAT
    GGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTAGCTA
                                                            ^
    116 CLAI,

    ProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSerThr
122 CCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTACTCCACC
    GGATTGTAGTCCTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGCATGAGGTGG

    TyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIleCys
182 TACGGCAAGTTCCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGACATAATAATTTGT
    ATGCCGTTCAAGGAACGGCTGCCGCCCACGAGCCCCCCGCGAATACTGTATTATTAAACA

    AspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGln
242 GACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATTGGCACTGTCCTTGACCAA
    CTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTGACAGGAACTGGTT

    AlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySerVal
302 GCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTCCGTC
    CGTCTCTGACGCCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCCGAGGCAG
     ^
    303 ALWN1,

    ThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPhe
362 ACTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCCTTTT
    TGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCTCTCTAGGGAAAA

    TyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHis
422 TACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTTCTGTCAT
    ATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCCTCTGTAGAGTAGAAGACAGTA

    SerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaVal
482 TCAAAGAAGAAGTGCGACGAACTCGCCGCAAAGCTGGTCGCATTGGGCATCAATGCCGTG
    AGTTTCTTCTTCACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCGTAGTTACGGCAC

    AlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValValVal
542 GCCTACTACCGCGGTCTTGACGTGTCCGTCATCCCGACCAGCGGCGATGTTGTCGTCGTG
    CGGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCAC
            ^           ^
    550 SAC2, 560 DRD1,

    AlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsn
602 GCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGCAAT
    CGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTA
                 ^
    615 BSPH1,

    ThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThrIle
```

FIG. 14-1

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
662  ACGTGTGTCACCCAGACAGTCGATTTCAGCCTTGACCCTACCTTCACCATTGAGACAATC
     TGCACACAGTGGGTCTGTCAGCTAAAGTCGGAACTGGGATGGAAGTGGTAACTCTGTTAG

     ThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLys
722  ACGCTCCCCCAAGATGCTGTCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGAAG
     TGCGAGGGGGTTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGACCGTCCCCCTTC

     ProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSerSer
782  CCAGGCATCTACAGATTTGTGGCACCGGGGGAGCGCCCCTCCGGCATGTTCGACTCGTCC
     GGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTGAGCAGG
                                          ^                   ^

     816 BGLI, 833 DRD1,

     ValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThr
842  GTCCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCCGCCGAGACT
     CAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCGGGCGGCTCTGA
                                                ^

     881 SACI,

     ThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeu
902  ACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCATCTT
     TGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACGGTCCTGGTAGAA
                                     ^

     931 SMAI XMAI,

     GluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGln
962  GAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCACTTTCTATCCCAG
     CTTAAAACCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAAGATAGGGTC
                               ^

     985 STUI,

     ThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAla
1022 ACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGGTAGCGTACCAAGCCACCGTGTGCGCT
     TGTTTCGTCTCACCCCTCTTGGAAGGAATGGACCATCGCATGGTTCGGTGGCACACGCGA
                                                  ^

     1069 DRA3,

     ArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeuLys
1082 AGGGCTCAAGCCCCTCCCCCATCGTGGGACCAGATGTGGAAGTGTTTGATTCGCCTCAAG
     TCCCGAGTTCGGGGAGGGGGTAGCACCCTGGTCTACACCTTCACAAACTAAGCGGAGTTC

     ProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGluIle
1142 CCCACCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTCAGAATGAAATC
     GGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACTTTAG
           ^

     1150 NCOI,

     ThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluVal
1202 ACCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTCGGCCGACCTGGAGGTC
     TGGGACTGCGTGGGTCAGTGGTTTATGTAGTACTGTACGTACAGCCGGCTGGACCTCCAG
                                     ^   ^   ^       ^     ^

     1230 BSPH1, 1234 DRD1, 1237 AVA3, 1245 EAG1 XMA3, 1250 DRD1,


     ValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeu
1262 GTCACGAGCACCTGGGTGCTCGTTGGCGGCGTCCTGGCTGCTTTGGCCGCGTATTGCCTG
     CAGTGCTCGTGGACCCACGAGCAACCGCCGCAGGACCGACGAAACCGGCGCATAACGGAC
```

FIG. 14-2

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
      SerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIle
1322  TCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGTCCGGGAAGCCGGCAATCATA
      AGTTGTCCGACGCACCAGTATCACCCGTCCCAGCAGAACAGGCCCTTCGGCCGTTAGTAT
                                                              ^

      1369 NAEI,

      ProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeu
1382  CCTGACAGGGAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTA
      GGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCACGAGAGTCGTGAAT
         ^
      1385 DRD1,

      ProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeu
1442  CCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTC
      GGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAG

      LeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGln
1502  CTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAGACCAACTGGCAA
      GACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTT
      ^     ^
      1502 PSTI, 1507 TTH3I,

      LysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeu
1562  AAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACTTCATCAGTGGGATACAATACTTG
      TTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCCTATGTTATGAAC
         ^                        ^
      1565 XHOI, 1586 NDEI,

      AlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAla
1622  GCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTACAGCT
      CGCCCGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAACTACCGAAAATGTCGA
                              ^                                ^
      1643 BSTE2, 1677 ALWN1 PVU2,

      AlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrp
1682  GCTGTCACCAGCCCACTAACCACTAGCCAAACCCTCCTCTTCAACATATTGGGGGGGTGG
      CGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATAACCCCCCCACC

      ValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAla
1742  GTGGCTGCCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTGGGCGCTGGCTTAGCT
      CACCGACGGGTCGAGCGGCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAATCGA
                                                            ^
      1794 ESP1,

      GlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyr
1802  GGCGCCGCCATCGGCAGTGTTGGACTGGGGAAGGTCCTCATAGACATCCTTGCAGGGTAT
      CCGCGGCGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCCATA
      ^
      1802 KAS1 NARI,

      GlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSer
1862  GGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCCTCC
      CCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGGAGG
                        ^                       ^
      1878 SACI, 1899 BSPH1,
```

FIG. 14-3

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
     ThrGluAspLeuValAsnLeuLeuPr AlaIleLeuSerProGlyAlaLeuValValGly
1922 ACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGTCGGC
     TGCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGGAGCATCAGCCG
           ^
     1928 TTH3I,

     ValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrp
1982 GTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCAGTGG
     CACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCCGCTCCCCCGTCACGTCACC
                        ^              ^
     2004 NAEI, 2017 SMAI XMAI,

     MetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrVal
2042 ATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCCCACGCACTACGTG
     TACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCGTGATGCAC
                           ^                          ^
     2067 SMAI XMAI, 2093 DRA3,

     ProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGln
2102 CCGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAACCCAG
     GGCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGTCGGAGTGACATTGGGTC
                ^                                              ^
     2115 PVU2, 2159 ALWN1,

     LeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySer
2162 CTCCTGAGGCGACTGCACCAGTGGATAAGCTCGGAGTGTACCACTCCATGCTCCGGTTCC
     GAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGTGAGGTACGAGGCCAAGG
       ^                                                          ^
     2164 MST2, 2220 ECON1,

     TrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeu
2222 TGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGGCTA
     ACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACTCGCTGAAATTCTGGACCGAT

     LysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyr
2282 AAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCCTGCCAGCGCGGGTAT
     TTTCGATTCGAGTACGGTGTCGACGGACCCTAGGGGAAACACAGGACGGTCGCGCCCATA
       ^             ^            ^
     2285 ESP1, 2300 PVU2, 2310 BAMHI,

     LysGlyValTrpArgGlyAspGlyIleMetHisThrArgCysHisCysGlyAlaGluIle
2342 AAGGGGGTCTGGCGAGGGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATC
     TTCCCCCAGACCGCTCCCCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACTCTAG

     ThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsnMet
2402 ACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCCTAGGACCTGCAGGAACATG
     TGACCTGTACAGTTTTTGCCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCCTTGTAC
                        ^                 ^     ^^
     2425 BSAB1, 2441 AVR2, 2448 SSE83871, 2449 PSTI,

     TrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAla
2462 TGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCTGTACCCCCCTTCCTGCG
     ACCTCACCCTGGAAGGGGTAATTACGGATGTGGTGCCCGGGGACATGGGGGGAAGGACGC
                        ^                 ^
     2480 ASE1, 2497 APAI,

     ProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGln
```

FIG. 14-4

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
2522  CCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATACGTGGAGATAAGGCAG
      GGCTTGATGTGCAAGCGCGATACCTCCCACAGACGTCTCCTTATGCACCTCTATTCCGTC
                                          ^

      2553 PSTI,

      ValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGln
2582  GTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTTAAATGCCCGTGCCAG
      CACCCCCTGAAGGTGATGCACTGCCCATACTGATGACTGTTAGAATTTACGGGCACGGTC
            ^

      2594 DRA3,

      ValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaPro
2642  GTCCCATCGCCCGAATTTTTCACAGAATTGGACGGGGTGCGCCTACATAGGTTTGCGCCC
      CAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAAACGCGGG

      ProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyrPro
2702  CCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTCAGAGTAGGACTCCACGAATACCCG
      GGGACGTTCGGGAACGACGCCCTCCTCCATAGTAAGTCTCATCCTGAGGTGCTTATGGGC
                                                                ^

      2757 HGIE2,

      ValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMetLeu
2762  GTAGGGTCGCAATTACCTTGCGAGCCCGAACCGGACGTGGCCGTGTTGACGTCCATGCTC
      CATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGCACAACTGCAGGTACGAG
                                                ^

      2809 AAT2,

      ThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerPro
2822  ACTGATCCCTCCCATATAACAGCAGAGGCGGCCGGGCGAAGGTTGGCGAGGGGATCACCC
      TGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCCGCTTCCAACCGCTCCCCTAGTGGG
                                    ^

      2850 EAG1 XMA3,

      ProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCys
2882  CCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGC
      GGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGTTGAACG
            ^                 ^

      2889 BALI, 2903 NHEI,

      ThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGln
2942  ACCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAGGCAG
      TGGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCCGTC
                                    ^  ^

      2966 ESP1, 2969 SACI,

      GluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSer
3002  GAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGACTCC
      CTCTACCCGCCGTTGTAGTGGTCCCAACTCAGTCTTTTGTTTCACCACTAAGACCTGAGG

      PheAspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeu
3062  TTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAAATCCTG
      AAGCTAGGCGAACACCGCCTCCTCCTGCTCGCCCTCTAGAGGCATGGGCGTCTTTAGGAC
                                                ^

      3096 BGL2,

      ArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgPr AspTyrAsnPro
3122  CGGAAGTCTCGGAGATTCGCCCAGGCCCTGCCCGTTTGGGCGCGGCCGGACTATAACCCC
```

FIG. 14-5

RECEIVED DEC 0 9 2002 TECH CENTER 1600/2900

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
GCCTTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAACCCGCGCCGGCCTGATATTGGGG
                                    ^                   ^

3143 ALWN1, 3164 EAG1 XMA3,

    ProLeuValGluThrTrpLysLysProAspTyrGluProProValValHisGlyCysPro
3182 CCGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACCACCTGTGGTCCATGGCTGCCCG
     GGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGACACCAGGTACCGACGGGC
                                                ^           ^

3217 HGIE2, 3229 NCOI,

    LeuProProProLysSerProProValProProProArgLysLysArgThrValValLeu
3242 CTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCCTCGGAAGAAGCGGACGGTGGTCCTC
     GAAGGTGGAGGTTTCAGGGGAGGACACGGAGGCGGAGCCTTCTTCGCCTGCCACCAGGAG

    ThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSer
3302 ACTGAATCAACCCTATCTACTGCCTTGGCCGAGCTCGCCACCAGAAGCTTTGGCAGCTCC
     TGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCGTCGAGG
                                      ^           ^

3332 SACI, 3346 HIND3,

    SerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGluProAlaProSerGly
3362 TCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCGCCCCTTCTGGC
     AGTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGAAGACCG

    CysProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGluPro
3422 TGCCCCCCCGACTCCGACGCTGAGTCCTATTCCTCCATGCCCCCCCTGGAGGGGGAGCCT
     ACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCCCTCGGA
                    ^

3437 EAM11051,

    GlyAspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGlu
3482 GGGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGCGGAG
     CCCCTAGGCCTAGAATCGCTGCCCAGTACCAGTTGCCAGTCATCACTCCGGTTGCGCCTC
       ^^ ^

3484 BAMHI, 3485 BSAB1, 3487 BSPE1,

    AspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAla
3542 GATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCACTCGTCACCCCGTGCGCC
     CTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGCACGCGG
                                                  ^           ^

3589 DRA3, 3600 SAC2,

    AlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHisAsn
3602 GCGGAAGAACAGAAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTCACCACAAT
     CGCCTTCTTGTCTTTGACGGGTAGTTACGTGATTCGTTGAGCAACGATGCAGTGGTGTTA
            ^                                             ^

3611 ALWN1, 3655 PFLM1,

    LeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAsp
3662 TTGGTGTATTCCACCACCTCACGCAGTGCTTGCCAAAGGCAGAAGAAAGTCACATTTGAC
     AACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGTCTTCTTTCAGTGTAAACTG
                        ^

3681 DRA3,

    ArgLeuGlnValLeuAspS rHisTyrGlnAspValLeuLysGluValLysAlaAlaAla
3722 AGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAGGTTAAAGCAGCGGCG
     TCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCCTCCAATTTCGTCGCCGC
```

FIG. 14-6

```
      SerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSerLeuThrProProHis
3782  TCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGCAGCCTGACGCCCCCACAC
      AGTTTTCACTTCCGATTGAACGATAGGCATCTCCTTCGAACGTCGGACTGCGGGGGTGTG
                                                ^

      3816 HIND3,

      SerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLysAla
3842  TCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTTGCCATGCCAGAAAGGCC
      AGTCGGTTTAGGTTCAAACCAATACCCCGTTTTCTGCAGGCAACGGTACGGTCTTTCCGG
                                              ^                 ^

      3875 AAT2, 3890 BGLI,

      ValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsnValThrProIleAsp
3902  GTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACAATGTAACACCAATAGAC
      CATTGGGTGTAGTTGAGGCACACCTTTCTGGAAGACCTTCTGTTACATTGTGGTTATCTG

      ThrThrIleMetAlaLysAsnGluValPheCysValGlnProGluLysGlyGlyArgLys
3962  ACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTCAGCCTGAGAAGGGGGGTCGTAAG
      TGATGGTAGTACCGATTCTTGCTCCAAAAGACGCAAGTCGGACTCTTCCCCCCAGCATTC

      ProAlaArgLeuIleValPheProAspLeuGlyValArgValCysGluLysMetAlaLeu
4022  CCAGCTCGTCTCATCGTGTTCCCCGATCTGGGCGTGCGCGTGTGCGAAAAGATGGCTTTG
      GGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACACGCTTTTCTACCGAAAC

      TyrAspValValThrLysLeuProLeuAlaValMetGlySerSerTyrGlyPheGlnTyr
4082  TACGACGTGGTTACAAAGCTCCCCTTGGCCGTGATGGGAAGCTCCTACGGATTCCAATAC
      ATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCCTTCGAGGATGCCTAAGGTTATG

      SerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSerLysLysThrProMet
4142  TCACCAGGACAGCGGGTTGAATTCCTCGTGCAAGCGTGGAAGTCCAAGAAAACCCCAATG
      AGTGGTCCTGTCGCCCAACTTAAGGAGCACGTTCGCACCTTCAGGTTCTTTTGGGGTTAC
                        ^

      4160 ECORI,

      GlyPheSerTyrAspThrArgCysPheAspSerThrValThrGluSerAspIleArgThr
4202  GGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCGTACG
      CCCAAGAGCATACTATGGGCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGC
                                  ^     ^

      4229 DRD1, 4236 ALWN1,

      GluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArgValAlaIleLysSer
4262  GAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGCGTGGCCATCAAGTCC
      CTCCTCCGTTAGATGGTTACAACACTGGAGCTGGGGGTTCGGGCGCACCGGTAGTTCAGG
                                                    ^     ^

      4301 BGLI, 4308 BALI,

      LeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGly
4322  CTCACCGAGAGGCTTTATGTTGGGGGCCCTCTTACCAATTCAAGGGGGGAGAACTGCGGC
      GAGTGGCTCTCCGAAATACAACCCCCGGGAGAATGGTTAAGTTCCCCCCTCTTGACGCCG
                              ^

      4345 APAI,

      TyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCys
4382  TATCGCAGGTGCCGCGCGAGCGGCGTACTGACAACTAGCTGTGGTAACACCCTCACTTGC
      ATAGCGTCCACGGCGCGCTCGCCGCATGACTGTTGATCGACACCATTGTGGGAGTGAACG
```

FIG. 14-7

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
     TyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyL uGlnAspCysThrMetLeuVal
4442 TACATCAAGGCCCGGGCAGCCTGTCGAGCCGCAGGGCTCCAGGACTGCACCATGCTCGTG
     ATGTAGTTCCGGGCCCGTCGGACAGCTCGGCGTCCCGAGGTCCTGACGTGGTACGAGCAC
                ^

     4452 SMAI XMAI,

     CysGlyAspAspLeuValValIleCysGluSerAlaGlyValGlnGluAspAlaAlaSer
4502 TGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGCGAGC
     ACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCCAGGTCCTCCTGCGCCGCTCG
          ^  ^

     4508 DRD1, 4511 TTH3I,

     LeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProProGlyAspProProGln
4562 CTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCCCCTGGGGACCCCCCACAA
     GACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGCGGGGGGGACCCCTGGGGGGTGTT

     ProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnValSerValAlaHisAsp
4622 CCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCCAACGTGTCAGTCGCCCACGAC
     GGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGTGCTG
                  ^

     4637 SACI,

     GlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArgAla
4682 GGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCTACAACCCCCCTCGCGAGAGCT
     CCGCGACCTTTCTCCCAGATGATGGAGTGGGCACTGGGATGTTGGGGGGAGCGCTCTCGA
                                                        ^

     4731 NRUI,

     AlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMetPhe
4742 GCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCATGTTT
     CGCACCCTCTGTCGTTCTGTGTGAGGTCAGTTAAGGACCGATCCGTTGTATTAGTACAAA

     AlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAla
4802 GCCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCCTTATAGCC
     CGGGGGTGTGACACCCGCTCCTACTATGACTACTGGGTAAAGAAATCGCAGGAATATCGG
        ^^

     4806 PFLM1, 4807 DRA3,

     ArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIleGlu
4862 AGGGACCAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCATAGAA
     TCCCTGGTCGAACTTGTCCGGGAGCTAACGCTCTAGATGCCCCGGACGATGAGGTATCTT
                                        ^

     4893 BGL2,

     ProLeuAspLeuProProIleIleGlnArgLeuHisGlyLeuSerAlaPheSerLeuHis
4922 CCACTGGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTTCACTCCAC
     GGTGACCTAGATGGAGGTTAGTAAGTTTCTGAGGTACCGGAGTCGCGTAAAAGTGAGGTG
                                        ^

     4954 NCOI,

     SerTyrSerProGlyGluIleAsnArgValAlaAlaCysLeuArgLysLeuGlyValPro
4982 AGTTACTCTCCAGGTGAAATCAATAGGGTGGCCGCATGCCTCAGAAAACTTGGGGTACCG
     TCAATGAGAGGTCCACTTTAGTTATCCCACCGGCGTACGGAGTCTTTTGAACCCCATGGC
                                        ^                   ^

     5015 SPHI, 5035 KPNI,

     ProLeuArgAlaTrpArgHisArgAlaArgSerValArgAlaArgLeuLeuAlaArgGly
```

FIG. 14-8

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

```
5042  CCCTTGCGAGCTTGGAGACACCGGGCCCGGAGCGTCCGCGCTAGGCTTCTGGCCAGAGGA
      GGGAACGCTCGAACCTCTGTGGCCCGGGCCTCGCAGGCGCGATCCGAAGACCGGTCTCCT
                              ^                               ^

      5064 APAI, 5091 BALI,

      GlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLys
5102  GGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGCAGTAAGAACAAAGCTCAAA
      CCGTCCCGACGGTATACACCGTTCATGGAGAAGTTGACCCGTCATTCTTGTTTCGAGTTT
                 ^

      5113 NDEI,

      LeuThrProIleAlaAlaAlaGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyr
5162  CTCACTCCAATAGCGGCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTCACGGCTGGCTAC
      GAGTGAGGTTATCGCCGGCGACCGGTCGACCTGAACAGGCCGACCAAGTGCCGACCGATG
                 ^^       ^   ^

      5174 NOTI, 5175 EAG1 XMA3, 5182 BALI, 5186 PVU2,

      SerGlyGlyAspIleTyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
5222  AGCGGGGGAGACATTTATCACAGCGTGTCTCATGCCCGGCCCCGCTGGATCTGGTTTTGC
      TCGCCCCCTCTGTAAATAGTGTCGCACAGAGTACGGGCCGGGGCGACCTAGACCAAAACG
                          ^

      5240 DRA3,

      LeuLeuLeuLeuAlaAlaGlyValGlyIleTyrLeuLeuProAsnArgOP
5282  CTACTCCTGCTTGCTGCAGGGGTAGGCATCTACCTCCTCCCCAACCGATGAATAGTCGAC
      GATGAGGACGAACGACGTCCCCATCCGTAGATGGAGGAGGGGTTGGCTACTTATCAGCTG
      ^^
      5295 PSTI, 5336 SALI,
```

FIG. 14-9

RECEIVED
DEC 1 8 2002
TECH CENTER 1600/2900

OIPE
DEC 0 2 2002
PATENT & TRADEMARK OFFICE
JC13

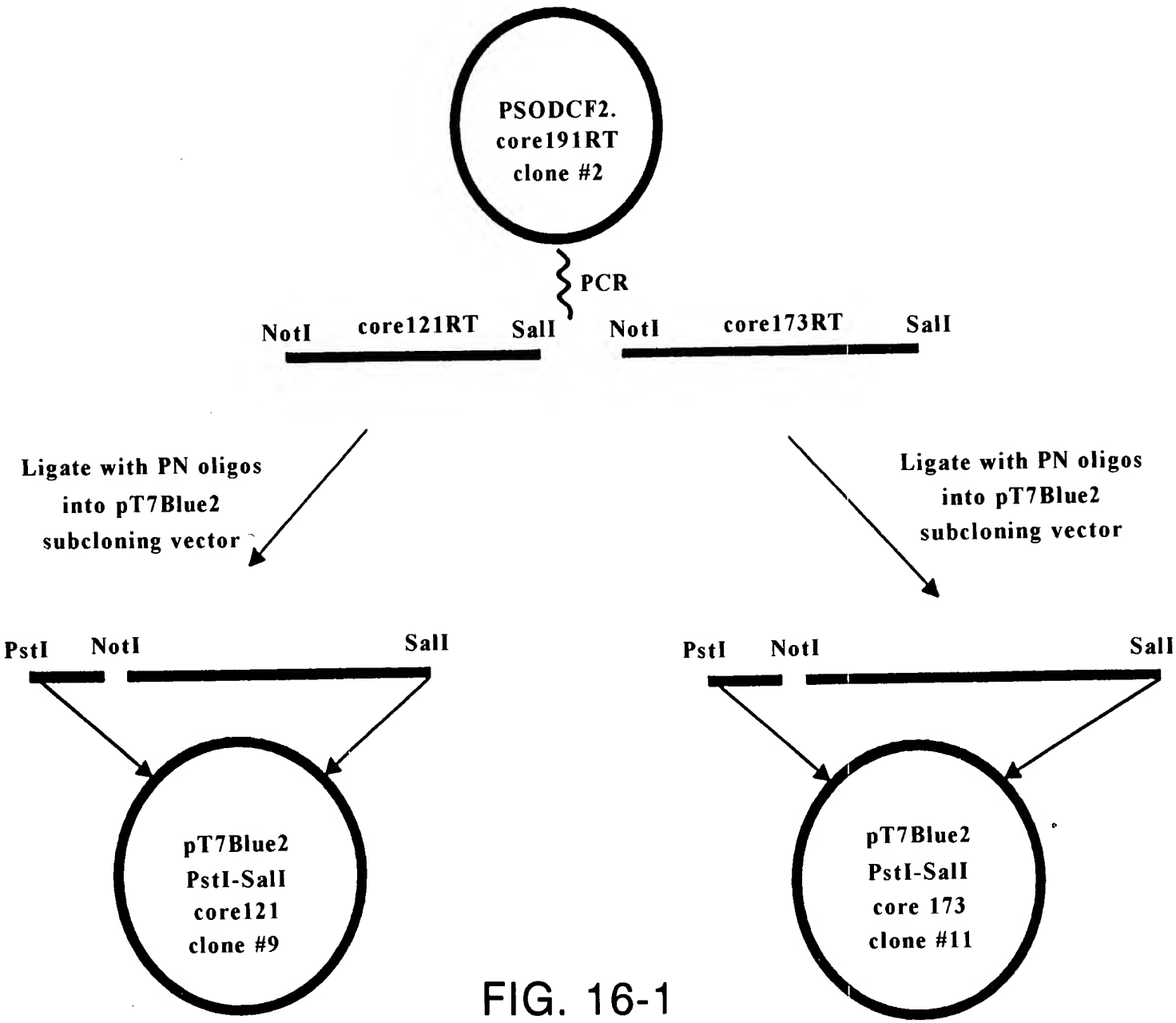

FIG. 16-1

PATENT & TRADEMARK OFFICE
DEC 02 2002
OIPE
JC13

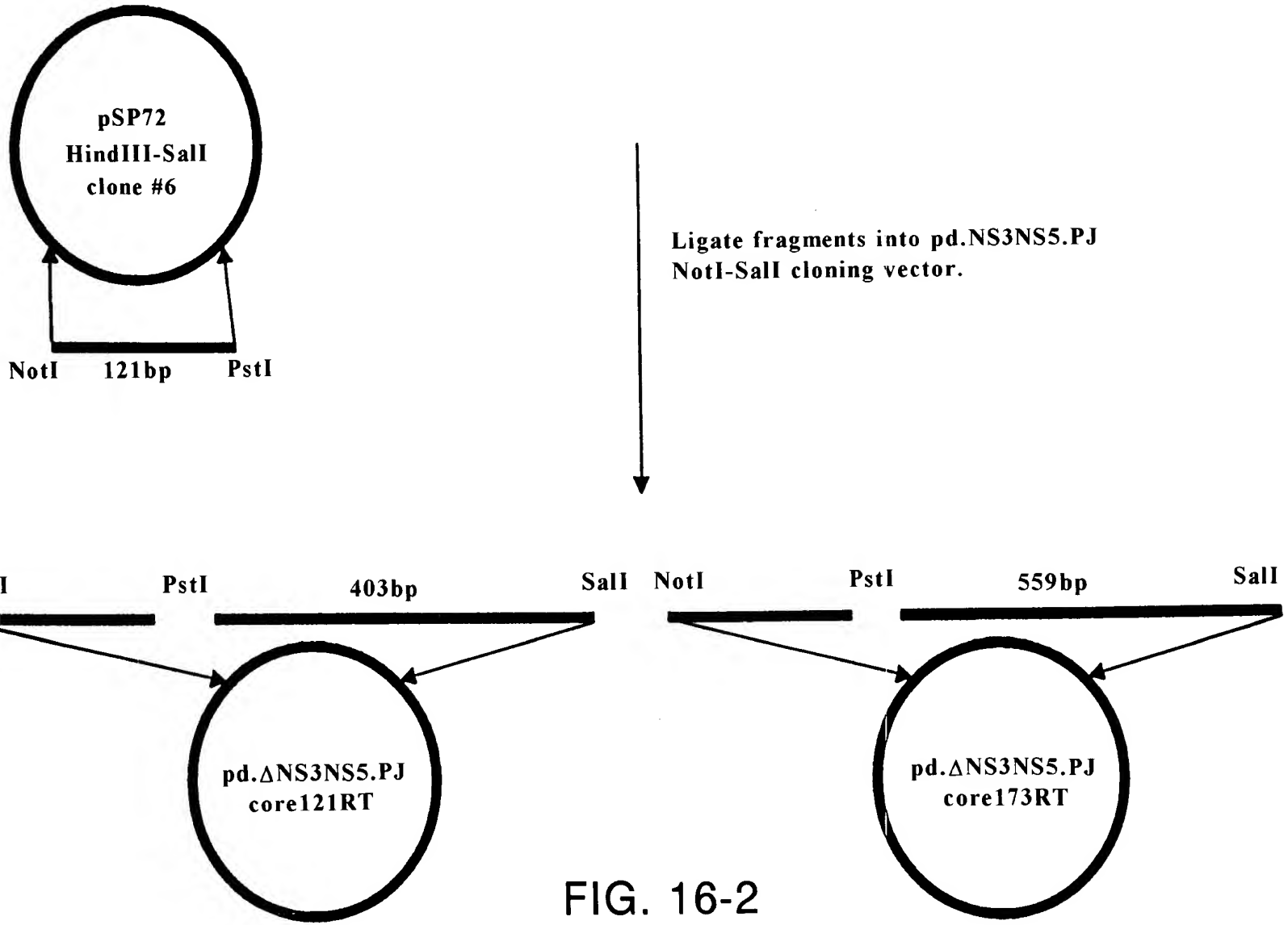

FIG. 16-2

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

```
                    MetAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsn
  2 AGCTTACAAAACAAAATGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTCAAC
    TCGAATGTTTTGTTTTACCGACGTATACGTCGAGTCCCGATATTCCACGATCATGAGTTG
    ^                       ^                               ^
    1 HIND3, 24 NDEI, 52 SCAI,

    ProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAsp
 62 CCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGATCGAT
    GGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTAGCTA
                                                              ^
    116 CLAI,

    ProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSerThr
122 CCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTACTCCACC
    GGATTGTAGTCCTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGCATGAGGTGG

    TyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIleCys
182 TACGGCAAGTTCCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGACATAATAATTTGT
    ATGCCGTTCAAGGAACGGCTGCCGCCCACGAGCCCCCCGCGAATACTGTATTATTAAACA

    AspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGln
242 GACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATTGGCACTGTCCTTGACCAA
    CTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTGACAGGAACTGGTT

    AlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySerVal
302 GCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTCCGTC
    CGTCTCTGACGCCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCCGAGGCAG
     ^
    303 ALWN1,

    ThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPhe
362 ACTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCCTTTT
    TGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCTCTCTAGGGAAAA

    TyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHis
422 TACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTTCTGTCAT
    ATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCCTCTGTAGAGTAGAAGACAGTA
```

FIG. 17-1

RECEIVED
DEC 06 2002
TECH CENTER 1600/2900

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
     SerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIl AsnAlaVal
482  TCAAAGAAGAAGTGCGACGAACTCGCCGCAAAGCTGGTCGCATTGGGCATCAATGCCGTG
     AGTTTCTTCTTCACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCGTAGTTACGGCAC

     AlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValValVal
542  GCCTACTACCGCGGTCTTGACGTGTCCGTCATCCCGACCAGCGGCGATGTTGTCGTCGTG
     CGGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCAC
              ^           ^
     550 SAC2, 560 DRD1,

     AlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsn
602  GCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGCAAT
     CGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTA
                 ^
     615 BSPH1,

     ThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThrIle
662  ACGTGTGTCACCCAGACAGTCGATTTCAGCCTTGACCCTACCTTCACCATTGAGACAATC
     TGCACACAGTGGGTCTGTCAGCTAAAGTCGGAACTGGGATGGAAGTGGTAACTCTGTTAG

     ThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLys
722  ACGCTCCCCCAAGATGCTGTCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGAAG
     TGCGAGGGGGTTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGACCGTCCCCCTTC

     ProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSerSer
782  CCAGGCATCTACAGATTTGTGGCACCGGGGGAGCGCCCCTCCGGCATGTTCGACTCGTCC
     GGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTGAGCAGG
                                          ^              ^
     816 BGLI, 833 DRD1,

     ValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThr
842  GTCCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCCGCCGAGACT
     CAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCGGGCGGCTCTGA
                                                ^
     881 SACI,

     ThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeu
902  ACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCATCTT
     TGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACGGTCCTGGTAGAA
                                          ^
     931 SMAI XMAI,

     GluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGln
962  GAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCACTTTCTATCCCAG
     CTTAAAACCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAAGATAGGGTC
                                    ^
     985 STUI,

     ThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAla
1022 ACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGGTAGCGTACCAAGCCACCGTGTGCGCT
     TGTTTCGTCTCACCCCTCTTGGAAGGAATGGACCATCGCATGGTTCGGTGGCACACGCGA
                                                      ^
     1069 DRA3,

     ArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeuLys
1082 AGGGCTCAAGCCCCTCCCCCATCGTGGGACCAGATGTGGAAGTGTTTGATTCGCCTCAAG
```

FIG. 17-2

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
        TCCCGAGTTCGGGGAGGGGGTAGCACCCTGGTCTACACCTTCACAAACTAAGCGGAGTTC

        ProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGluIle
1142    CCCACCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTCAGAATGAAATC
        GGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACTTTAG
                ^
        1150 NCOI,

        ThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluVal
1202    ACCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTCGGCCGACCTGGAGGTC
        TGGGACTGCGTGGGTCAGTGGTTTATGTAGTACTGTACGTACAGCCGGCTGGACCTCCAG
                                        ^   ^   ^       ^   ^
        1230 BSPH1, 1234 DRD1, 1237 AVA3, 1245 EAG1 XMA3, 1250 DRD1,


        ValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeu
1262    GTCACGAGCACCTGGGTGCTCGTTGGCGGCGTCCTGGCTGCTTTGGCCGCGTATTGCCTG
        CAGTGCTCGTGGACCCACGAGCAACCGCCGCAGGACCGACGAAACCGGCGCATAACGGAC

        SerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIle
1322    TCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGTCCGGGAAGCCGGCAATCATA
        AGTTGTCCGACGCACCAGTATCACCCGTCCCAGCAGAACAGGCCCTTCGGCCGTTAGTAT
                                                        ^
        1369 NAEI,

        ProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeu
1382    CCTGACAGGGAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTA
        GGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCACGAGAGTCGTGAAT
          ^
        1385 DRD1,

        ProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeu
1442    CCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTC
        GGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAG

        LeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGln
1502    CTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAGACCAACTGGCAA
        GACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTT
        ^   ^
        1502 PSTI, 1507 TTH3I,

        LysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIieGlnTyrLeu
1562    AAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACTTCATCAGTGGGATACAATACTTG
        TTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCCTATGTTATGAAC
          ^                 ^
        1565 XHOI, 1586 NDEI,

        AlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAla
1622    GCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTACAGCT
        CGCCCGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAACTACCGAAAATGTCGA
                                ^                               ^
        1643 BSTE2, 1677 ALWN1 PVU2,

        AlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIl LeuGlyGlyTrp
1682    GCTGTCACCAGCCCACTAACCACTAGCCAAACCCTCCTCTTCAACATATTGGGGGGGTGG
        CGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATAACCCCCCCACC
```

FIG. 17-3

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
      ValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAla
1742  GTGGCTGCCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTGGGCGCTGGCTTAGCT
      CACCGACGGGTCGAGCGGCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAATCGA
                                                                ^
      1794 ESP1,

      GlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyr
1802  GGCGCCGCCATCGGCAGTGTTGGACTGGGGAAGGTCCTCATAGACATCCTTGCAGGGTAT
      CCGCGGCGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCCATA
      ^
      1802 KAS1 NARI,

      GlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSer
1862  GGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCCTCC
      CCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGGAGG
                    ^                         ^
      1878 SACI, 1899 BSPH1,

      ThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGly
1922  ACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGTCGGC
      TGCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGGAGCATCAGCCG
           ^
      1928 TTH3I,

      ValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrp
1982  GTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCAGTGG
      CACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCCGCTCCCCCGTCACGTCACC
                          ^              ^
      2004 NAEI, 2017 SMAI XMAI,

      MetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrVal
2042  ATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCCCACGCACTACGTG
      TACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCGTGATGCAC
                                ^                          ^
      2067 SMAI XMAI, 2093 DRA3,

      ProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGln
2102  CCGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAACCCAG
      GGCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGTCGGAGTGACATTGGGTC
                    ^                                           ^
      2115 PVU2, 2159 ALWN1,

      LeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySer
2162  CTCCTGAGGCGACTGCACCAGTGGATAAGCTCGGAGTGTACCACTCCATGCTCCGGTTCC
      GAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGTGAGGTACGAGGCCAAGG
        ^                                                       ^
      2164 MST2, 2220 ECON1,

      TrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeu
2222  TGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGGCTA
      ACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACTCGCTGAAATTCTGGACCGAT

      LysAlaLysLeuM tProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyr
2282  AAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCCTGCCAGCGCGGGTAT
      TTTCGATTCGAGTACGGTGTCGACGGACCCTAGGGGAAACACAGGACGGTCGCGCCCATA
        ^                 ^           ^
      2285 ESP1, 2300 PVU2, 2310 BAMHI,
```

FIG. 17-4

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

```
      LysGlyValTrpArgGlyAspGlyIleMetHisThrArgCysHisCysGlyAlaGluIle
2342  AAGGGGGTCTGGCGAGGGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATC
      TTCCCCCAGACCGCTCCCCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACTCTAG

      ThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsnMet
2402  ACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCCTAGGACCTGCAGGAACATG
      TGACCTGTACAGTTTTTGCCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCCTTGTAC
                      ^                   ^       ^^

      2425 BSAB1, 2441 AVR2, 2448 SSE83871, 2449 PSTI,

      TrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAla
2462  TGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCTGTACCCCCCTTCCTGCG
      ACCTCACCCTGGAAGGGGTAATTACGGATGTGGTGCCCGGGGACATGGGGGGAAGGACGC
                        ^                   ^

      2480 ASE1, 2497 APAI,

      ProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGln
2522  CCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATACGTGGAGATAAGGCAG
      GGCTTGATGTGCAAGCGCGATACCTCCCACAGACGTCTCCTTATGCACCTCTATTCCGTC
                                        ^

      2553 PSTI,

      ValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGln
2582  GTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTTAAATGCCCGTGCCAG
      CACCCCCTGAAGGTGATGCACTGCCCATACTGATGACTGTTAGAATTTACGGGCACGGTC
                  ^

      2594 DRA3,

      ValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaPro
2642  GTCCCATCGCCCGAATTTTTCACAGAATTGGACGGGGTGCGCCTACATAGGTTTGCGCCC
      CAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAAACGCGGG

      ProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyrPro
2702  CCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTCAGAGTAGGACTCCACGAATACCCG
      GGGACGTTCGGGAACGACGCCCTCCTCCATAGTAAGTCTCATCCTGAGGTGCTTATGGGC
                                                          ^

      2757 HGIE2,

      ValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMetLeu
2762  GTAGGGTCGCAATTACCTTGCGAGCCCGAACCGGACGTGGCCGTGTTGACGTCCATGCTC
      CATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGCACAACTGCAGGTACGAG
                                                ^

      2809 AAT2,

      ThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerPro
2822  ACTGATCCCTCCCATATAACAGCAGAGGCGGCCGGGCGAAGGTTGGCGAGGGGATCACCC
      TGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCCGCTTCCAACCGCTCCCCTAGTGGG
                                        ^

      2850 EAG1 XMA3,

      ProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCys
2882  CCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGC
      GGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGTTGAACG
            ^                   ^

      2889 BALI, 2903 NHEI,
```

FIG. 17-5

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
     ThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGln
2942 ACCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAGGCAG
     TGGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCCGTC
                               ^  ^

     2966 ESP1, 2969 SACI,

     GluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSer
3002 GAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGACTCC
     CTCTACCCGCCGTTGTAGTGGTCCCAACTCAGTCTTTTGTTTCACCACTAAGACCTGAGG

     PheAspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeu
3062 TTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAAATCCTG
     AAGCTAGGCGAACACCGCCTCCTCCTGCTCGCCCTCTAGAGGCATGGGCGTCTTTAGGAC
                                         ^

     3096 BGL2,

     ArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnPro
3122 CGGAAGTCTCGGAGATTCGCCCAGGCCCTGCCCGTTTGGGCGCGGCCGGACTATAACCCC
     GCCTTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAACCCGCGCCGGCCTGATATTGGGG
                          ^                    ^

     3143 ALWN1, 3164 EAG1 XMA3,

     ProLeuValGluThrTrpLysLysProAspTyrGluProProValValHisGlyCysPro
3182 CCGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACCACCTGTGGTCCATGGCTGCCCG
     GGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGACACCAGGTACCGACGGGC
                                         ^           ^

     3217 HGIE2, 3229 NCOI,

     LeuProProProLysSerProProValProProProArgLysLysArgThrValValLeu
3242 CTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCCTCGGAAGAAGCGGACGGTGGTCCTC
     GAAGGTGGAGGTTTCAGGGGAGGACACGGAGGCGGAGCCTTCTTCGCCTGCCACCAGGAG

     ThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSer
3302 ACTGAATCAACCCTATCTACTGCCTTGGCCGAGCTCGCCACCAGAAGCTTTGGCAGCTCC
     TGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCGTCGAGG
                                    ^              ^

     3332 SACI, 3346 HIND3,

     SerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGluProAlaProSerGly
3362 TCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCGCCCCTTCTGGC
     AGTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGAAGACCG

     CysProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGluPro
3422 TGCCCCCCCGACTCCGACGCTGAGTCCTATTCCTCCATGCCCCCCCTGGAGGGGGAGCCT
     ACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCCCTCGGA
                         ^

     3437 EAM11051,

     GlyAspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGlu
3482 GGGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGCGGAG
     CCCCTAGGCCTAGAATCGCTGCCCAGTACCAGTTGCCAGTCATCACTCCGGTTGCGCCTC
       ^^ ^

     3484 BAMHI, 3485 BSAB1, 3487 BSPE1,

     AspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAla
3542 GATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCACTCGTCACCCCGTGCGCC
     CTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGCACGCGG
```

FIG. 17-6

OIPE
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

```
      AlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHisAsn
3602  GCGGAAGAACAGAAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTCACCACAAT
      CGCCTTCTTGTCTTTGACGGGTAGTTACGTGATTCGTTGAGCAACGATGCAGTGGTGTTA
                ^                                               ^

      3611 ALWN1, 3655 PFLM1,

      LeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAsp
3662  TTGGTGTATTCCACCACCTCACGCAGTGCTTGCCAAAGGCAGAAGAAAGTCACATTTGAC
      AACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGTCTTCTTTCAGTGTAAACTG
                        ^

      3681 DRA3,

      ArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAlaAla
3722  AGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAGGTTAAAGCAGCGGCG
      TCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCCTCCAATTTCGTCGCCGC

      SerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSerLeuThrProProHis
3782  TCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGCAGCCTGACGCCCCCACAC
      AGTTTTCACTTCCGATTGAACGATAGGCATCTCCTTCGAACGTCGGACTGCGGGGGTGTG
                                        ^

      3816 HIND3,

      SerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLysAla
3842  TCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTTGCCATGCCAGAAAGGCC
      AGTCGGTTTAGGTTCAAACCAATACCCCGTTTTCTGCAGGCAACGGTACGGTCTTTCCGG
                                        ^               ^

      3875 AAT2, 3890 BGLI,

      ValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsnValThrProIleAsp
3902  GTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACAATGTAACACCAATAGAC
      CATTGGGTGTAGTTGAGGCACACCTTTCTGGAAGACCTTCTGTTACATTGTGGTTATCTG

      ThrThrIleMetAlaLysAsnGluValPheCysValGlnProGluLysGlyGlyArgLys
3962  ACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTCAGCCTGAGAAGGGGGGTCGTAAG
      TGATGGTAGTACCGATTCTTGCTCCAAAAGACGCAAGTCGGACTCTTCCCCCCAGCATTC

      ProAlaArgLeuIleValPheProAspLeuGlyValArgValCysGluLysMetAlaLeu
4022  CCAGCTCGTCTCATCGTGTTCCCCGATCTGGGCGTGCGCGTGTGCGAAAAGATGGCTTTG
      GGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACACGCTTTTCTACCGAAAC

      TyrAspValValThrLysLeuProLeuAlaValMetGlySerSerTyrGlyPheGlnTyr
4082  TACGACGTGGTTACAAAGCTCCCCTTGGCCGTGATGGGAAGCTCCTACGGATTCCAATAC
      ATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCCTTCGAGGATGCCTAAGGTTATG

      SerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSerLysLysThrProMet
4142  TCACCAGGACAGCGGGTTGAATTCCTCGTGCAAGCGTGGAAGTCCAAGAAAACCCCAATG
      AGTGGTCCTGTCGCCCAACTTAAGGAGCACGTTCGCACCTTCAGGTTCTTTTGGGGTTAC
                        ^

      4160 ECORI,

      GlyPheSerTyrAspThrArgCysPheAspSerThrValThrGluSerAspIleArgThr
4202  GGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCGTACG
      CCCAAGAGCATACTATGGGCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGC
                                  ^     ^
```

FIG. 17-7

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
          4229 DRD1,  4236 ALWN1,

          GluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArgValAlaIleLysSer
4262      GAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGCGTGGCCATCAAGTCC
          CTCCTCCGTTAGATGGTTACAACACTGGAGCTGGGGGTTCGGGCGCACCGGTAGTTCAGG
                                                    ^       ^

          4301 BGLI,  4308 BALI,

          LeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGly
4322      CTCACCGAGAGGCTTTATGTTGGGGGCCCTCTTACCAATTCAAGGGGGGAGAACTGCGGC
          GAGTGGCTCTCCGAAATACAACCCCCGGGAGAATGGTTAAGTTCCCCCCTCTTGACGCCG
                                    ^

          4345 APAI,

          TyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCys
4382      TATCGCAGGTGCCGCGCGAGCGGCGTACTGACAACTAGCTGTGGTAACACCCTCACTTGC
          ATAGCGTCCACGGCGCGCTCGCCGCATGACTGTTGATCGACACCATTGTGGGAGTGAACG

          TyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuVal
4442      TACATCAAGGCCCGGGCAGCCTGTCGAGCCGCAGGGCTCCAGGACTGCACCATGCTCGTG
          ATGTAGTTCCGGGCCCGTCGGACAGCTCGGCGTCCCGAGGTCCTGACGTGGTACGAGCAC
                    ^

          4452 SMAI XMAI,

          CysGlyAspAspLeuValValIleCysGluSerAlaGlyValGlnGluAspAlaAlaSer
4502      TGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGCGAGC
          ACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCCAGGTCCTCCTGCGCCGCTCG
                ^   ^

          4508 DRD1,  4511 TTH3I,

          LeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProProGlyAspProProGln
4562      CTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCCCCTGGGGACCCCCCACAA
          GACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGCGGGGGGGACCCCTGGGGGGTGTT

          ProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnValSerValAlaHisAsp
4622      CCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCCAACGTGTCAGTCGCCCACGAC
          GGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGTGCTG
                          ^

          4637 SACI,

          GlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArgAla
4682      GGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCTACAACCCCCCTCGCGAGAGCT
          CCGCGACCTTTCTCCCAGATGATGGAGTGGGCACTGGGATGTTGGGGGGAGCGCTCTCGA
                                                              ^

          4731 NRUI,

          AlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMetPhe
4742      GCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCATGTTT
          CGCACCCTCTGTCGTTCTGTGTGAGGTCAGTTAAGGACCGATCCGTTGTATTAGTACAAA

          AlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAla
4802      GCCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCCTTATAGCC
          CGGGGGTGTGACACCCGCTCCTACTATGACTACTGGGTAAAGAAATCGCAGGAATATCGG
              ^^

          4806 PFLM1,  4807 DRA3,

          ArgAspGlnLeuGluGlnAlaLeuAspCysGluIl TyrGlyAlaCysTyrSerIl Glu
```

FIG. 17-8

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
4862  AGGGACCAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCATAGAA
      TCCCTGGTCGAACTTGTCCGGGAGCTAACGCTCTAGATGCCCCGGACGATGAGGTATCTT
                                          ^

      4893 BGL2,

      ProLeuAspLeuProProIleIleGlnArgLeuHisGlyLeuSerAlaPheSerLeuHis
4922  CCACTGGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTTCACTCCAC
      GGTGACCTAGATGGAGGTTAGTAAGTTTCTGAGGTACCGGAGTCGCGTAAAAGTGAGGTG
                                        ^

      4954 NCOI,

      SerTyrSerProGlyGluIleAsnArgValAlaAlaCysLeuArgLysLeuGlyValPro
4982  AGTTACTCTCCAGGTGAAATCAATAGGGTGGCCGCATGCCTCAGAAAACTTGGGGTACCG
      TCAATGAGAGGTCCACTTTAGTTATCCCACCGGCGTACGGAGTCTTTTGAACCCCATGGC
                                          ^                   ^

      5015 SPHI, 5035 KPNI,

      ProLeuArgAlaTrpArgHisArgAlaArgSerValArgAlaArgLeuLeuAlaArgGly
5042  CCCTTGCGAGCTTGGAGACACCGGGCCCGGAGCGTCCGCGCTAGGCTTCTGGCCAGAGGA
      GGGAACGCTCGAACCTCTGTGGCCCGGGCCTCGCAGGCGCGATCCGAAGACCGGTCTCCT
                                ^                           ^

      5064 APAI, 5091 BALI,

      GlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLys
5102  GGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGCAGTAAGAACAAAGCTCAAA
      CCGTCCCGACGGTATACACCGTTCATGGAGAAGTTGACCCGTCATTCTTGTTTCGAGTTT
                ^

      5113 NDEI,

      LeuThrProIleAlaAlaAlaGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyr
5162  CTCACTCCAATAGCGGCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTCACGGCTGGCTAC
      GAGTGAGGTTATCGCCGGCGACCGGTCGACCTGAACAGGCCGACCAAGTGCCGACCGATG
                  ^^      ^   ^

      5174 NOTI, 5175 EAG1 XMA3, 5182 BALI, 5186 PVU2,

      SerGlyGlyAspIleTyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
5222  AGCGGGGGAGACATTTATCACAGCGTGTCTCATGCCCGGCCCCGCTGGATCTGGTTTTGC
      TCGCCCCCTCTGTAAATAGTGTCGCACAGAGTACGGGCCGGGGCGACCTAGACCAAAACG
                      ^

      5240 DRA3,

      LeuLeuLeuLeuAlaAlaGlyValGlyIleTyrLeuLeuProAsnArgMetSerThrAsn
5282  CTACTCCTGCTTGCTGCAGGGGTAGGCATCTACCTCCTCCCCAACCGAATGAGCACGAAT
      GATGAGGACGAACGACGTCCCCATCCGTAGATGGAGGAGGGGTTGGCTTACTCGTGCTTA
                  ^

      5295 PSTI,

      ProLysProGlnArgLysThrLysArgAsnThrAsnArgArgProGlnAspValLysPhe
5342  CCTAAACCTCAAAGAAAGACCAAACGTAACACCAACCGGCGGCCGCAGGACGTCAAGTTC
      GGATTTGGAGTTTCTTTCTGGTTTGCATTGTGGTTGGCCGCCGGCGTCCTGCAGTTCAAG
                                          ^^      ^           ^

      5380 NOTI, 5381 EAG1 XMA3, 5390 AAT2, 5401 SMAI XMAI,

      ProGlyGlyGlyGlnIleValGlyGlyValTyrLeuL uProArgArgGlyProArgLeu
5402  CCGGGTGGCGGTCAGATCGTTGGTGGAGTTTACTTGTTGCCGCGCAGGGGCCCTAGATTG
      GGCCCACCGCCAGTCTAGCAACCACCTCAAATGAACAACGGCGCGTCCCCGGGATCTAAC
                                                ^
```

FIG. 17-9

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
      5449 APAI,

           GlyValArgAlaThrArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnPro
5462       GGTGTGCGCGCGACGAGAAAGACTTCCGAGCGGTCGCAACCTCGAGGTAGACGTCAGCCT
           CCACACGCGCGCTGCTCTTTCTGAAGGCTCGCCAGCGTTGGAGCTCCATCTGCAGTCGGA
                ^         ^                   ^         ^
           5467 BSSH2, 5478 XMNI, 5502 XHOI, 5511 AAT2,

           IleProLysAlaArgArgProGluGlyArgThrTrpAlaGlnProGlyTyrProTrpPro
5522       ATCCCCAAGGCTCGTCGGCCCGAGGGCAGGACCTGGGCTCAGCCCGGGTACCCTTGGCCC
           TAGGGGTTCCGAGCAGCCGGGCTCCCGTCCTGGACCCGAGTCGGGCCCATGGGAACCGGG
                                   ^         ^     ^   ^
           5548 ALWN1, 5558 ESP1, 5564 SMAI XMAI, 5568 KPNI,

           LeuTyrGlyAsnGluGlyCysGlyTrpAlaGlyTrpLeuLeuSerProArgGlySerArg
5582       CTCTATGGCAATGAGGGCTGCGGGTGGGCGGGATGGCTCCTGTCTCCCCGTGGCTCTCGG
           GAGATACCGTTACTCCCGACGCCCACCCGCCCTACCGAGGACAGAGGGGCACCGAGAGCC

           ProSerTrpGlyProThrAspProArgArgArgSerArgAsnLeuGlyLysOC AM
5642       CCTAGCTGGGGCCCCACAGACCCCCGGCGTAGGTCGCGCAATTTGGGTAAGTAATAGTCG
           GGATCGACCCCGGGGTGTCTGGGGGCCGCATCCAGCGCGTTAAACCCATTCATTATCAGC
                ^                                                     ^
           5650 APAI, 5698 SALI,


5702       AC
           TG
```

FIG. 17-10

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
                    MetAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsn
  2 AGCTTACAAAACAAAATGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTCAAC
    TCGAATGTTTTGTTTTACCGACGTATACGTCGAGTCCCGATATTCCACGATCATGAGTTG
    ^                   ^                             ^
    1 HIND3, 24 NDEI, 52 SCAI,

    ProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAsp
 62 CCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGATCGAT
    GGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTAGCTA
                                                            ^
    116 CLAI,

    ProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSerThr
122 CCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTACTCCACC
    GGATTGTAGTCCTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGCATGAGGTGG

    TyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIleCys
182 TACGGCAAGTTCCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGACATAATAATTTGT
    ATGCCGTTCAAGGAACGGCTGCCGCCCACGAGCCCCCCGCGAATACTGTATTATTAAACA

    AspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGln
242 GACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATTGGCACTGTCCTTGACCAA
    CTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTGACAGGAACTGGTT

    AlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySerVal
302 GCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTCCGTC
    CGTCTCTGACGCCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCCGAGGCAG
     ^
    303 ALWN1,

    ThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPhe
362 ACTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCCTTTT
    TGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCTCTCTAGGGAAAA

    TyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHis
422 TACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTTCTGTCAT
    ATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCCTCTGTAGAGTAGAAGACAGTA

    SerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaVal
482 TCAAAGAAGAAGTGCGACGAACTCGCCGCAAAGCTGGTCGCATTGGGCATCAATGCCGTG
    AGTTTCTTCTTCACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCGTAGTTACGGCAC

    AlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValValVal
542 GCCTACTACCGCGGTCTTGACGTGTCCGTCATCCCGACCAGCGGCGATGTTGTCGTCGTG
    CGGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCAC
            ^       ^
    550 SAC2, 560 DRD1,

    AlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsn
602 GCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGCAAT
    CGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTA
                 ^
    615 BSPH1,
```

FIG. 18-1

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
     ThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThrIle
662  ACGTGTGTCACCCAGACAGTCGATTTCAGCCTTGACCCTACCTTCACCATTGAGACAATC
     TGCACACAGTGGGTCTGTCAGCTAAAGTCGGAACTGGGATGGAAGTGGTAACTCTGTTAG

     ThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLys
722  ACGCTCCCCCAAGATGCTGTCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGAAG
     TGCGAGGGGGTTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGACCGTCCCCCTTC

     ProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSerSer
782  CCAGGCATCTACAGATTTGTGGCACCGGGGGAGCGCCCCTCCGGCATGTTCGACTCGTCC
     GGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTGAGCAGG
                                              ^                ^

     816 BGLI, 833 DRD1,

     ValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThr
842  GTCCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCCGCCGAGACT
     CAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCGGGCGGCTCTGA
                                                 ^

     881 SACI,

     ThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeu
902  ACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCATCTT
     TGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACGGTCCTGGTAGAA
                                        ^

     931 SMAI XMAI,

     GluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGln
962  GAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCACTTTCTATCCCAG
     CTTAAAACCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAAGATAGGGTC
                               ^

     985 STUI,

     ThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAla
1022 ACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGGTAGCGTACCAAGCCACCGTGTGCGCT
     TGTTTCGTCTCACCCCTCTTGGAAGGAATGGACCATCGCATGGTTCGGTGGCACACGCGA
                                                    ^

     1069 DRA3,

     ArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeuLys
1082 AGGGCTCAAGCCCCTCCCCCATCGTGGGACCAGATGTGGAAGTGTTTGATTCGCCTCAAG
     TCCCGAGTTCGGGGAGGGGGTAGCACCCTGGTCTACACCTTCACAAACTAAGCGGAGTTC

     ProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGluIle
1142 CCCACCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTCAGAATGAAATC
     GGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACTTTAG
          ^

     1150 NCOI,

     ThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluVal
1202 ACCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTCGGCCGACCTGGAGGTC
     TGGGACTGCGTGGGTCAGTGGTTTATGTAGTACTGTACGTACAGCCGGCTGGACCTCCAG
                                     ^  ^  ^        ^     ^

     1230 BSPH1, 1234 DRD1, 1237 AVA3, 1245 EAG1 XMA3, 1250 DRD1,


     ValThrS rThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeu
1262 GTCACGAGCACCTGGGTGCTCGTTGGCGGCGTCCTGGCTGCTTTGGCCGCGTATTGCCTG
```

FIG. 18-2

OIPE JC13 DEC 0 2 2002 PATENT & TRADEMARK OFFICE

```
        CAGTGCTCGTGGACCCACGAGCAACCGCCGCAGGACCGACGAAACCGGCGCATAACGGAC

        SerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIle
1322    TCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGTCCGGGAAGCCGGCAATCATA
        AGTTGTCCGACGCACCAGTATCACCCGTCCCAGCAGAACAGGCCCTTCGGCCGTTAGTAT
                                                                ^

        1369 NAEI,

        ProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeu
1382    CCTGACAGGGAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTA
        GGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCACGAGAGTCGTGAAT
          ^

        1385 DRD1,

        ProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeu
1442    CCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTC
        GGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAG

        LeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGln
1502    CTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAGACCAACTGGCAA
        GACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTT
        ^   ^

        1502 PSTI, 1507 TTH3I,

        LysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeu
1562    AAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACTTCATCAGTGGGATACAATACTTG
        TTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCCTATGTTATGAAC
          ^                 ^

        1565 XHOI, 1586 NDEI,

        AlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAla
1622    GCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTACAGCT
        CGCCCGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAACTACCGAAAATGTCGA
                          ^                                     ^

        1643 BSTE2, 1677 ALWN1 PVU2,

        AlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrp
1682    GCTGTCACCAGCCCACTAACCACTAGCCAAACCCTCCTCTTCAACATATTGGGGGGGTGG
        CGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATAACCCCCCCACC

        ValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAla
1742    GTGGCTGCCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTGGGCGCTGGCTTAGCT
        CACCGACGGGTCGAGCGGCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAATCGA
                                                              ^

        1794 ESP1,

        GlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyr
1802    GGCGCCGCCATCGGCAGTGTTGGACTGGGGAAGGTCCTCATAGACATCCTTGCAGGGTAT
        CCGCGGCGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCCATA
        ^

        1802 KAS1 NARI,

        GlyAlaGlyValAlaGlyAlaL uValAlaPheLysIleMetSerGlyGluValProSer
1862    GGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCCTCC
        CCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGGAGG
                          ^                     ^

        1878 SACI, 1899 BSPH1,
```

FIG. 18-3

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
      ThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGly
1922  ACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGTCGGC
      TGCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGGAGCATCAGCCG
            ^
      1928 TTH3I,

      ValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrp
1982  GTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCAGTGG
      CACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCCGCTCCCCCGTCACGTCACC
                        ^                 ^
      2004 NAEI, 2017 SMAI XMAI,

      MetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrVal
2042  ATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCCCACGCACTACGTG
      TACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCGTGATGCAC
                              ^                             ^
      2067 SMAI XMAI, 2093 DRA3,

      ProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGln
2102  CCGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAACCCAG
      GGCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGTCGGAGTGACATTGGGTC
                     ^                                           ^
      2115 PVU2, 2159 ALWN1,

      LeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySer
2162  CTCCTGAGGCGACTGCACCAGTGGATAAGCTCGGAGTGTACCACTCCATGCTCCGGTTCC
      GAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGTGAGGTACGAGGCCAAGG
        ^                                                       ^
      2164 MST2, 2220 ECON1,

      TrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeu
2222  TGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGGCTA
      ACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACTCGCTGAAATTCTGGACCGAT

      LysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyr
2282  AAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCCTGCCAGCGCGGGTAT
      TTTCGATTCGAGTACGGTGTCGACGGACCCTAGGGGAAACACAGGACGGTCGCGCCCATA
        ^                 ^           ^
      2285 ESP1, 2300 PVU2, 2310 BAMHI,

      LysGlyValTrpArgGlyAspGlyIleMetHisThrArgCysHisCysGlyAlaGluIle
2342  AAGGGGGTCTGGCGAGGGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATC
      TTCCCCCAGACCGCTCCCCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACTCTAG

      ThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsnMet
2402  ACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCCTAGGACCTGCAGGAACATG
      TGACCTGTACAGTTTTTGCCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCCTTGTAC
                              ^                 ^     ^^
      2425 BSAB1, 2441 AVR2, 2448 SSE83871, 2449 PSTI,

      TrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAla
2462  TGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCTGTACCCCCCTTCCTGCG
      ACCTCACCCTGGAAGGGGTAATTACGGATGTGGTGCCCGGGGACATGGGGGGAAGGACGC
                        ^                 ^
      2480 ASE1, 2497 APAI,
```

FIG. 18-4

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
                ProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGln
2522            CCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATACGTGGAGATAAGGCAG
                GGCTTGATGTGCAAGCGCGATACCTCCCACAGACGTCTCCTTATGCACCTCTATTCCGTC
                                                  ^

                2553 PSTI,

                ValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGln
2582            GTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTTAAATGCCCGTGCCAG
                CACCCCCTGAAGGTGATGCACTGCCCATACTGATGACTGTTAGAATTTACGGGCACGGTC
                          ^

                2594 DRA3,

                ValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaPro
2642            GTCCCATCGCCCGAATTTTTCACAGAATTGGACGGGGTGCGCCTACATAGGTTTGCGCCC
                CAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAAACGCGGG

                ProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyrPro
2702            CCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTCAGAGTAGGACTCCACGAATACCCG
                GGGACGTTCGGGAACGACGCCCTCCTCCATAGTAAGTCTCATCCTGAGGTGCTTATGGGC
                                                                        ^

                2757 HGIE2,

                ValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMetLeu
2762            GTAGGGTCGCAATTACCTTGCGAGCCCGAACCGGACGTGGCCGTGTTGACGTCCATGCTC
                CATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGCACAACTGCAGGTACGAG
                                                              ^

                2809 AAT2,

                ThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerPro
2822            ACTGATCCCTCCCATATAACAGCAGAGGCGGCCGGGCGAAGGTTGGCGAGGGGATCACCC
                TGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCCGCTTCCAACCGCTCCCCTAGTGGG
                                        ^

                2850 EAG1 XMA3,

                ProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCys
2882            CCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGC
                GGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGTTGAACG
                        ^               ^

                2889 BALI, 2903 NHEI,

                ThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGln
2942            ACCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAGGCAG
                TGGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCCGTC
                                        ^   ^

                2966 ESP1, 2969 SACI,

                GluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSer
3002            GAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGACTCC
                CTCTACCCGCCGTTGTAGTGGTCCCAACTCAGTCTTTTGTTTCACCACTAAGACCTGAGG

                PheAspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeu
3062            TTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAAATCCTG
                AAGCTAGGCGAACACCGCCTCCTCCTGCTCGCCCTCTAGAGGCATGGGCGTCTTTAGGAC
                                                  ^

                3096 BGL2,

                ArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnPro
```

FIG. 18-5

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
3122  CGGAAGTCTCGGAGATTCGCCCAGGCCCTGCCCGTTTGGGCGCGGCCGGACTATAACCCC
      GCCTTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAACCCGCGCCGGCCTGATATTGGGG
                          ^                               ^

      3143 ALWN1, 3164 EAG1 XMA3,

      ProLeuValGluThrTrpLysLysProAspTyrGluProProValValHisGlyCysPro
3182  CCGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACCACCTGTGGTCCATGGCTGCCCG
      GGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGACACCAGGTACCGACGGGC
                                              ^               ^

      3217 HGIE2, 3229 NCOI,

      LeuProProProLysSerProProValProProProArgLysLysArgThrValValLeu
3242  CTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCCTCGGAAGAAGCGGACGGTGGTCCTC
      GAAGGTGGAGGTTTCAGGGGAGGACACGGAGGCGGAGCCTTCTTCGCCTGCCACCAGGAG

      ThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSer
3302  ACTGAATCAACCCTATCTACTGCCTTGGCCGAGCTCGCCACCAGAAGCTTTGGCAGCTCC
      TGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCGTCGAGG
                                        ^               ^

      3332 SACI, 3346 HIND3,

      SerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGluProAlaProSerGly
3362  TCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCGCCCCTTCTGGC
      AGTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGAAGACCG

      CysProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGluPro
3422  TGCCCCCCCGACTCCGACGCTGAGTCCTATTCCTCCATGCCCCCCCTGGAGGGGGAGCCT
      ACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCCCTCGGA
                        ^

      3437 EAM11051,

      GlyAspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGlu
3482  GGGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGCGGAG
      CCCCTAGGCCTAGAATCGCTGCCCAGTACCAGTTGCCAGTCATCACTCCGGTTGCGCCTC
        ^^ ^

      3484 BAMHI, 3485 BSAB1, 3487 BSPE1,

      AspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAla
3542  GATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCACTCGTCACCCCGTGCGCC
      CTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGCACGCGG
                                                      ^           ^

      3589 DRA3, 3600 SAC2,

      AlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHisAsn
3602  GCGGAAGAACAGAAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTCACCACAAT
      CGCCTTCTTGTCTTTGACGGGTAGTTACGTGATTCGTTGAGCAACGATGCAGTGGTGTTA
            ^                                                 ^

      3611 ALWN1, 3655 PFLM1,

      LeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAsp
3662  TTGGTGTATTCCACCACCTCACGCAGTGCTTGCCAAAGGCAGAAGAAAGTCACATTTGAC
      AACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGTCTTCTTTCAGTGTAAACTG
                          ^

      3681 DRA3,

      ArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAlaAla
3722  AGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAGGTTAAAGCAGCGGCG
```

FIG. 18-6

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
        TCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCCTCCAATTTCGTCGCCGC

        SerLysValLysAlaAsnLeuLeuS rValGluGluAlaCysSerLeuThrProProHis
3782    TCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGCAGCCTGACGCCCCCACAC
        AGTTTTCACTTCCGATTGAACGATAGGCATCTCCTTCGAACGTCGGACTGCGGGGGTGTG
                                                  ^

        3816 HIND3,

        SerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLysAla
3842    TCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTTGCCATGCCAGAAAGGCC
        AGTCGGTTTAGGTTCAAACCAATACCCCGTTTTCTGCAGGCAACGGTACGGTCTTTCCGG
                                          ^                ^

        3875 AAT2, 3890 BGLI,

        ValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsnValThrProIleAsp
3902    GTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACAATGTAACACCAATAGAC
        CATTGGGTGTAGTTGAGGCACACCTTTCTGGAAGACCTTCTGTTACATTGTGGTTATCTG

        ThrThrIleMetAlaLysAsnGluValPheCysValGlnProGluLysGlyGlyArgLys
3962    ACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTCAGCCTGAGAAGGGGGGTCGTAAG
        TGATGGTAGTACCGATTCTTGCTCCAAAAGACGCAAGTCGGACTCTTCCCCCCAGCATTC

        ProAlaArgLeuIleValPheProAspLeuGlyValArgValCysGluLysMetAlaLeu
4022    CCAGCTCGTCTCATCGTGTTCCCCGATCTGGGCGTGCGCGTGTGCGAAAAGATGGCTTTG
        GGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACACGCTTTTCTACCGAAAC

        TyrAspValValThrLysLeuProLeuAlaValMetGlySerSerTyrGlyPheGlnTyr
4082    TACGACGTGGTTACAAAGCTCCCCTTGGCCGTGATGGGAAGCTCCTACGGATTCCAATAC
        ATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCCTTCGAGGATGCCTAAGGTTATG

        SerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSerLysLysThrProMet
4142    TCACCAGGACAGCGGGTTGAATTCCTCGTGCAAGCGTGGAAGTCCAAGAAAACCCCAATG
        AGTGGTCCTGTCGCCCAACTTAAGGAGCACGTTCGCACCTTCAGGTTCTTTTGGGGTTAC
                              ^

        4160 ECORI,

        GlyPheSerTyrAspThrArgCysPheAspSerThrValThrGluSerAspIleArgThr
4202    GGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCGTACG
        CCCAAGAGCATACTATGGGCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGC
                                        ^     ^

        4229 DRD1, 4236 ALWN1,

        GluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArgValAlaIleLysSer
4262    GAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGCGTGGCCATCAAGTCC
        CTCCTCCGTTAGATGGTTACAACACTGGAGCTGGGGGTTCGGGCGCACCGGTAGTTCAGG
                                                  ^     ^

        4301 BGLI, 4308 BALI,

        LeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGly
4322    CTCACCGAGAGGCTTTATGTTGGGGGCCCTCTTACCAATTCAAGGGGGGAGAACTGCGGC
        GAGTGGCTCTCCGAAATACAACCCCCGGGAGAATGGTTAAGTTCCCCCCTCTTGACGCCG
                              ^

        4345 APAI,

        TyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCys
4382    TATCGCAGGTGCCGCGCGAGCGGCGTACTGACAACTAGCTGTGGTAACACCCTCACTTGC
        ATAGCGTCCACGGCGCGCTCGCCGCATGACTGTTGATCGACACCATTGTGGGAGTGAACG
```

FIG. 18-7

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
      TyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuVal
4442  TACATCAAGGCCCGGGCAGCCTGTCGAGCCGCAGGGCTCCAGGACTGCACCATGCTCGTG
      ATGTAGTTCCGGGCCCGTCGGACAGCTCGGCGTCCCGAGGTCCTGACGTGGTACGAGCAC
                ^
      4452 SMAI XMAI,

      CysGlyAspAspLeuValValIleCysGluSerAlaGlyValGlnGluAspAlaAlaSer
4502  TGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGCGAGC
      ACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCCAGGTCCTCCTGCGCCGCTCG
            ^   ^
      4508 DRD1, 4511 TTH3I,

      LeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProProGlyAspProProGln
4562  CTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCCCCTGGGGACCCCCCACAA
      GACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGCGGGGGGGACCCCTGGGGGGTGTT

      ProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnValSerValAlaHisAsp
4622  CCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCCAACGTGTCAGTCGCCCACGAC
      GGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGTGCTG
                     ^
      4637 SACI,

      GlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArgAla
4682  GGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCTACAACCCCCCTCGCGAGAGCT
      CCGCGACCTTTCTCCCAGATGATGGAGTGGGCACTGGGATGTTGGGGGGAGCGCTCTCGA
                                                        ^
      4731 NRUI,

      AlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMetPhe
4742  GCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCATGTTT
      CGCACCCTCTGTCGTTCTGTGTGAGGTCAGTTAAGGACCGATCCGTTGTATTAGTACAAA

      AlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAla
4802  GCCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCCTTATAGCC
      CGGGGGTGTGACACCCGCTCCTACTATGACTACTGGGTAAAGAAATCGCAGGAATATCGG
          ^^
      4806 PFLM1, 4807 DRA3,

      ArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIleGlu
4862  AGGGACCAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCATAGAA
      TCCCTGGTCGAACTTGTCCGGGAGCTAACGCTCTAGATGCCCCGGACGATGAGGTATCTT
                                          ^
      4893 BGL2,

      ProLeuAspLeuProProIleIleGlnArgLeuHisGlyLeuSerAlaPheSerLeuHis
4922  CCACTGGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTTCACTCCAC
      GGTGACCTAGATGGAGGTTAGTAAGTTTCTGAGGTACCGGAGTCGCGTAAAAGTGAGGTG
                                          ^
      4954 NCOI,

      SerTyrSerProGlyGluIleAsnArgValAlaAlaCysLeuArgLysLeuGlyValPro
4982  AGTTACTCTCCAGGTGAAATCAATAGGGTGGCCGCATGCCTCAGAAAACTTGGGGTACCG
      TCAATGAGAGGTCCACTTTAGTTATCCCACCGGCGTACGGAGTCTTTTGAACCCCATGGC
                                          ^                   ^
      5015 SPHI, 5035 KPNI,
```

FIG. 18-8

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
     ProLeuArgAlaTrpArgHisArgAlaArgSerValArgAlaArgLeuLeuAlaArgGly
5042 CCCTTGCGAGCTTGGAGACACCGGGCCCGGAGCGTCCGCGCTAGGCTTCTGGCCAGAGGA
     GGGAACGCTCGAACCTCTGTGGCCCGGGCCTCGCAGGCGCGATCCGAAGACCGGTCTCCT
                              ^                               ^

     5064 APAI, 5091 BALI,

     GlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLys
5102 GGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGCAGTAAGAACAAAGCTCAAA
     CCGTCCCGACGGTATACACCGTTCATGGAGAAGTTGACCCGTCATTCTTGTTTCGAGTTT
               ^

     5113 NDEI,

     LeuThrProIleAlaAlaAlaGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyr
5162 CTCACTCCAATAGCGGCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTCACGGCTGGCTAC
     GAGTGAGGTTATCGCCGGCGACCGGTCGACCTGAACAGGCCGACCAAGTGCCGACCGATG
               ^^      ^   ^

     5174 NOTI, 5175 EAG1 XMA3, 5182 BALI, 5186 PVU2,

     SerGlyGlyAspIleTyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
5222 AGCGGGGGAGACATTTATCACAGCGTGTCTCATGCCCGGCCCCGCTGGATCTGGTTTTGC
     TCGCCCCCTCTGTAAATAGTGTCGCACAGAGTACGGGCCGGGGCGACCTAGACCAAAACG
                    ^

     5240 DRA3,

     LeuLeuLeuLeuAlaAlaGlyValGlyIleTyrLeuLeuProAsnArgMetSerThrAsn
5282 CTACTCCTGCTTGCTGCAGGGGTAGGCATCTACCTCCTCCCCAACCGAATGAGCACGAAT
     GATGAGGACGAACGACGTCCCCATCCGTAGATGGAGGAGGGGTTGGCTTACTCGTGCTTA
               ^

     5295 PSTI,

     ProLysProGlnArgLysThrLysArgAsnThrAsnArgArgProGlnAspValLysPhe
5342 CCTAAACCTCAAAGAAAGACCAAACGTAACACCAACCGGCGGCCGCAGGACGTCAAGTTC
     GGATTTGGAGTTTCTTTCTGGTTTGCATTGTGGTTGGCCGCCGGCGTCCTGCAGTTCAAG
                                        ^^       ^          ^

     5380 NOTI, 5381 EAG1 XMA3, 5390 AAT2, 5401 SMAI XMAI,

     ProGlyGlyGlyGlnIleValGlyGlyValTyrLeuLeuProArgArgGlyProArgLeu
5402 CCGGGTGGCGGTCAGATCGTTGGTGGAGTTTACTTGTTGCCGCGCAGGGGCCCTAGATTG
     GGCCCACCGCCAGTCTAGCAACCACCTCAAATGAACAACGGCGCGTCCCCGGGATCTAAC
                                                  ^

     5449 APAI,

     GlyValArgAlaThrArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnPro
5462 GGTGTGCGCGCGACGAGAAAGACTTCCGAGCGGTCGCAACCTCGAGGTAGACGTCAGCCT
     CCACACGCGCGCTGCTCTTTCTGAAGGCTCGCCAGCGTTGGAGCTCCATCTGCAGTCGGA
          ^          ^                    ^          ^

     5467 BSSH2, 5478 XMNI, 5502 XHOI, 5511 AAT2,

     IleProLysAlaArgArgProGluGlyArgThrTrpAlaGlnProGlyTyrProTrpPro
5522 ATCCCCAAGGCTCGTCGGCCCGAGGGCAGGACCTGGGCTCAGCCCGGGTACCCTTGGCCC
     TAGGGGTTCCGAGCAGCCGGGCTCCCGTCCTGGACCCGAGTCGGGCCCATGGGAACCGGG
                               ^          ^     ^    ^

     5548 ALWN1, 5558 ESP1, 5564 SMAI XMAI, 5568 KPNI,

     LeuTyrGlyAsnGluGlyCysGlyTrpAlaGlyTrpLeuLeuSerProArgGlySerArg
5582 CTCTATGGCAATGAGGGCTGCGGGTGGGCGGGATGGCTCCTGTCTCCCCGTGGCTCTCGG
     GAGATACCGTTACTCCCGACGCCCACCCGCCCTACCGAGGACAGAGGGGCACCGAGAGCC
```

FIG. 18-9

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
     ProSerTrpGlyProThrAspProArgArgArgSerArgAsnLeuGlyLysValIleAsp
5642 CCTAGCTGGGGCCCCACAGACCCCCGGCGTAGGTCGCGCAATTTGGGTAAGGTCATCGAT
     GGATCGACCCCGGGGTGTCTGGGGGCCGCATCCAGCGCGTTAAACCCATTCCAGTAGCTA
           ^                                                    ^
     5650 APAI, 5696 CLAI,

     ThrLeuThrCysGlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeu
5702 ACCCTTACGTGCGGCTTCGCCGACCTCATGGGGTACATACCGCTCGTCGGCGCCCCTCTT
     TGGGAATGCACGCCGAAGCGGCTGGAGTACCCCATGTATGGCGAGCAGCCGCGGGGAGAA
                          ^                          ^     ^
     5724 HGIE2, 5750 KAS1 NARI, 5756 ECON1,

     GlyGlyAlaAlaArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyr
5762 GGAGGCGCTGCCAGGGCCCTGGCGCATGGCGTCCGGGTTCTGGAAGACGGCGTGAACTAT
     CCTCCGCGACGGTCCCGGGACCGCGTACCGCAGGCCCAAGACCTTCTGCCGCACTTGATA
              ^  ^
     5772 BSTXI, 5775 APAI,

     AlaThrGlyAsnLeuProGlyCysSerOC AM
5822 GCAACAGGGAACCTTCCTGGTTGCTCTTAATAGTCGAC
     CGTTGTCCCTTGGAAGGACCAACGAGAATTATCAGCTG
                                        ^
     5854 SALI,
```

FIG. 18-10

OIPE
DEC 02 2002
PATENT & TRADEMARK OFFICE JC13

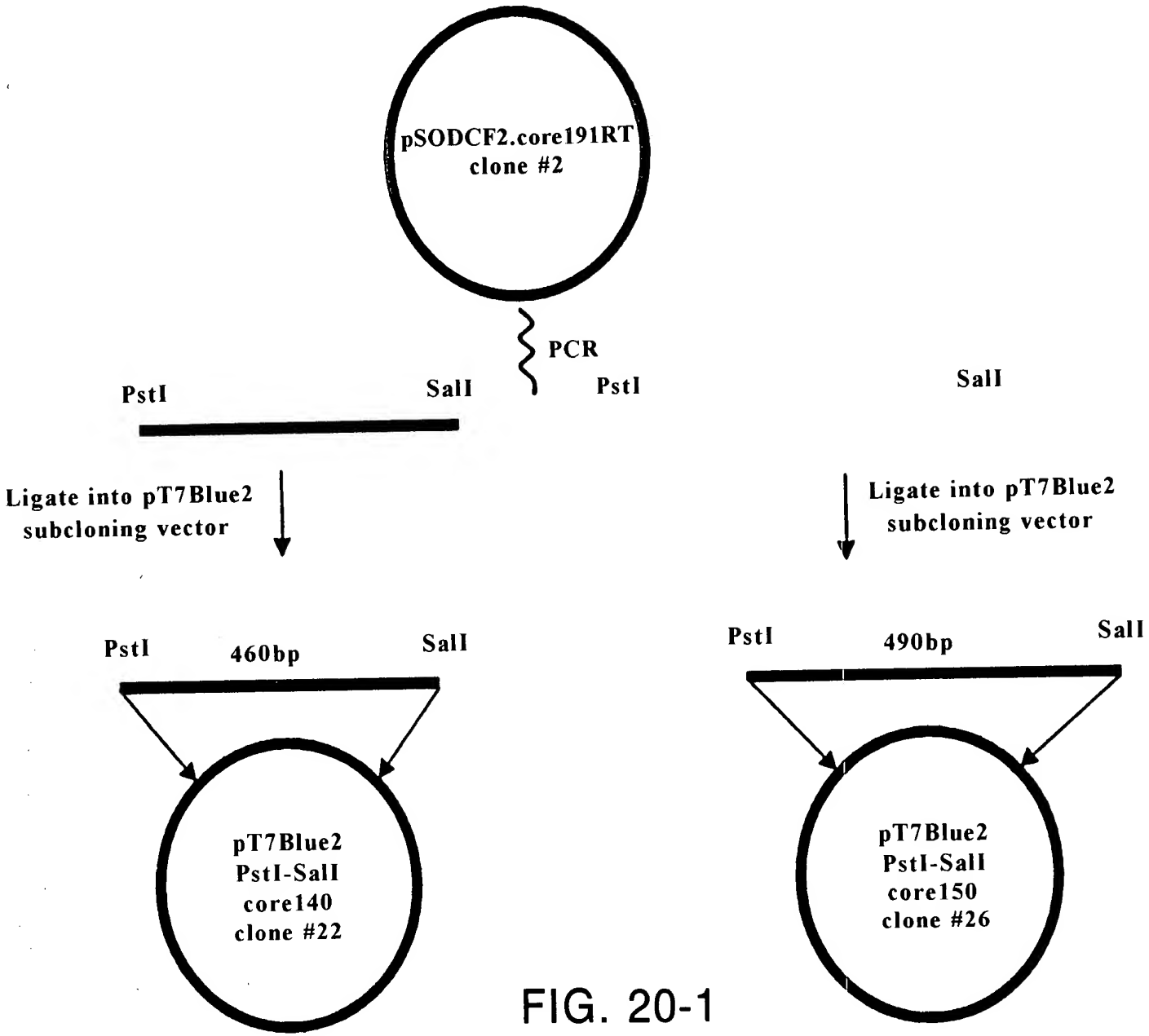

FIG. 20-1

OIPE
PATENT & TRADEMARK OFFICE
DEC 02 2002
JC13

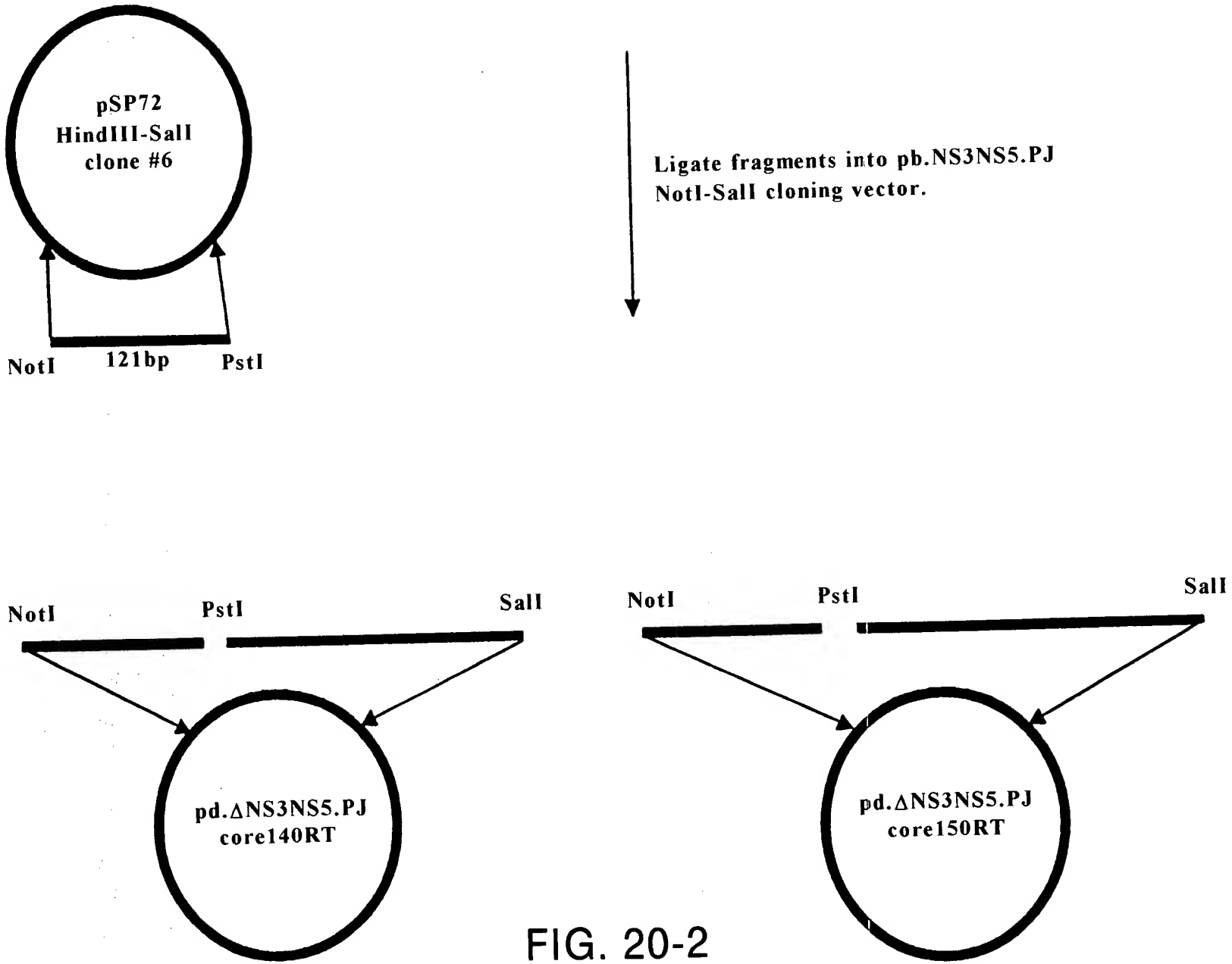

FIG. 20-2

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
                    MetAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsn
  2 AGCTTACAAAACAAAATGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTCAAC
    TCGAATGTTTTGTTTTACCGACGTATACGTCGAGTCCCGATATTCCACGATCATGAGTTG
    ^                 ^                                   ^
    1 HIND3, 24 NDEI, 52 SCAI,

    ProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAsp
 62 CCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGATCGAT
    GGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTAGCTA
                                                          ^
    116 CLAI,

    ProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSerThr
122 CCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTACTCCACC
    GGATTGTAGTCCTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGCATGAGGTGG

    TyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIleCys
182 TACGGCAAGTTCCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGACATAATAATTTGT
    ATGCCGTTCAAGGAACGGCTGCCGCCCACGAGCCCCCCGCGAATACTGTATTATTAAACA

    AspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGln
242 GACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATTGGCACTGTCCTTGACCAA
    CTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTGACAGGAACTGGTT

    AlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySerVal
302 GCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTCCGTC
    CGTCTCTGACGCCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCCGAGGCAG
     ^
    303 ALWN1,

    ThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPhe
362 ACTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCCTTTT
    TGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCTCTCTAGGGAAAA

    TyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHis
422 TACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTTCTGTCAT
    ATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCCTCTGTAGAGTAGAAGACAGTA
```

FIG. 21-1

RECEIVED
DEC 06 2002
TECH CENTER 1600/2900

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
     SerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaVal
482  TCAAAGAAGAAGTGCGACGAACTCGCCGCAAAGCTGGTCGCATTGGGCATCAATGCCGTG
     AGTTTCTTCTTCACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCGTAGTTACGGCAC

     AlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValValVal
542  GCCTACTACCGCGGTCTTGACGTGTCCGTCATCCCGACCAGCGGCGATGTTGTCGTCGTG
     CGGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCAC
              ^          ^
     550 SAC2, 560 DRD1,

     AlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsn
602  GCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGCAAT
     CGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTA
                 ^
     615 BSPH1,

     ThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThrIle
662  ACGTGTGTCACCCAGACAGTCGATTTCAGCCTTGACCCTACCTTCACCATTGAGACAATC
     TGCACACAGTGGGTCTGTCAGCTAAAGTCGGAACTGGGATGGAAGTGGTAACTCTGTTAG

     ThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLys
722  ACGCTCCCCCAAGATGCTGTCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGAAG
     TGCGAGGGGGTTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGACCGTCCCCCTTC

     ProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSerSer
782  CCAGGCATCTACAGATTTGTGGCACCGGGGGAGCGCCCCTCCGGCATGTTCGACTCGTCC
     GGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTGAGCAGG
                                        ^              ^
     816 BGLI, 833 DRD1,

     ValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThr
842  GTCCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCCGCCGAGACT
     CAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCGGGCGGCTCTGA
                                              ^
     881 SACI,

     ThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeu
902  ACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCATCTT
     TGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACGGTCCTGGTAGAA
                                        ^
     931 SMAI XMAI,

     GluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGln
962  GAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCACTTTCTATCCCAG
     CTTAAAACCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAAGATAGGGTC
                                     ^
     985 STUI,

     ThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAla
1022 ACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGGTAGCGTACCAAGCCACCGTGTGCGCT
     TGTTTCGTCTCACCCCTCTTGGAAGGAATGGACCATCGCATGGTTCGGTGGCACACGCGA
                                                 ^
     1069 DRA3,

     ArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysL uIleArgLeuLys
1082 AGGGCTCAAGCCCCTCCCCCATCGTGGGACCAGATGTGGAAGTGTTTGATTCGCCTCAAG
```

FIG. 21-2

OIPE
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

```
     TCCCGAGTTCGGGGAGGGGGTAGCACCCTGGTCTACACCTTCACAAACTAAGCGGAGTTC

     ProThrLeuHisGlyPr ThrPr LeuLeuTyrArgLeuGlyAlaValGlnAsnGluIle
1142 CCCACCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTCAGAATGAAATC
     GGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACTTTAG
           ^
     1150 NCOI,

     ThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluVal
1202 ACCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTCGGCCGACCTGGAGGTC
     TGGGACTGCGTGGGTCAGTGGTTTATGTAGTACTGTACGTACAGCCGGCTGGACCTCCAG
                                 ^   ^   ^       ^    ^
     1230 BSPH1, 1234 DRD1, 1237 AVA3, 1245 EAG1 XMA3, 1250 DRD1,


     ValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeu
1262 GTCACGAGCACCTGGGTGCTCGTTGGCGGCGTCCTGGCTGCTTTGGCCGCGTATTGCCTG
     CAGTGCTCGTGGACCCACGAGCAACCGCCGCAGGACCGACGAAACCGGCGCATAACGGAC

     SerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIle
1322 TCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGTCCGGGAAGCCGGCAATCATA
     AGTTGTCCGACGCACCAGTATCACCCGTCCCAGCAGAACAGGCCCTTCGGCCGTTAGTAT
                                                    ^
     1369 NAEI,

     ProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeu
1382 CCTGACAGGGAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTA
     GGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCACGAGAGTCGTGAAT
       ^
     1385 DRD1,

     ProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeu
1442 CCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTC
     GGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAG

     LeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGln
1502 CTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAGACCAACTGGCAA
     GACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTT
     ^    ^
     1502 PSTI, 1507 TTH3I,

     LysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeu
1562 AAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACTTCATCAGTGGGATACAATACTTG
     TTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCCTATGTTATGAAC
       ^                 ^
     1565 XHOI, 1586 NDEI,

     AlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAla
1622 GCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTACAGCT
     CGCCCGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAACTACCGAAAATGTCGA
                              ^                                 ^
     1643 BSTE2, 1677 ALWN1 PVU2,

     AlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrp
1682 GCTGTCACCAGCCCACTAACCACTAGCCAAACCCTCCTCTTCAACATATTGGGGGGGTGG
     CGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATAACCCCCCCACC
```

FIG. 21-3

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

```
     ValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAla
1742 GTGGCTGCCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTGGGCGCTGGCTTAGCT
     CACCGACGGGTCGAGCGGCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAATCGA
                                                               ^

     1794 ESP1,

     GlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyr
1802 GGCGCCGCCATCGGCAGTGTTGGACTGGGGAAGGTCCTCATAGACATCCTTGCAGGGTAT
     CCGCGGCGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCCATA
     ^
     1802 KAS1 NARI,

     GlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSer
1862 GGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCCTCC
     CCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGGAGG
                     ^                   ^
     1878 SACI, 1899 BSPH1,

     ThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGly
1922 ACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGTCGGC
     TGCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGGAGCATCAGCCG
          ^
     1928 TTH3I,

     ValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrp
1982 GTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCAGTGG
     CACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCCGCTCCCCCGTCACGTCACC
                     ^                   ^
     2004 NAEI, 2017 SMAI XMAI,

     MetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrVal
2042 ATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCCCACGCACTACGTG
     TACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCGTGATGCAC
                               ^                             ^
     2067 SMAI XMAI, 2093 DRA3,

     ProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGln
2102 CCGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAACCCAG
     GGCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGTCGGAGTGACATTGGGTC
                    ^                                           ^
     2115 PVU2, 2159 ALWN1,

     LeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySer
2162 CTCCTGAGGCGACTGCACCAGTGGATAAGCTCGGAGTGTACCACTCCATGCTCCGGTTCC
     GAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGTGAGGTACGAGGCCAAGG
       ^                                                       ^
     2164 MST2, 2220 ECON1,

     TrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeu
2222 TGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGGCTA
     ACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACTCGCTGAAATTCTGGACCGAT

     LysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyr
2282 AAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCCTGCCAGCGCGGGTAT
     TTTCGATTCGAGTACGGTGTCGACGGACCCTAGGGGAAACACAGGACGGTCGCGCCCATA
       ^                 ^                 ^
     2285 ESP1, 2300 PVU2, 2310 BAMHI,
```

FIG. 21-4

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

```
     LysGlyValTrpArgGlyAspGlyIleM tHisThrArgCysHisCysGlyAlaGluIle
2342 AAGGGGGTCTGGCGAGGGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATC
     TTCCCCCAGACCGCTCCCCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACTCTAG

     ThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsnMet
2402 ACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCCTAGGACCTGCAGGAACATG
     TGACCTGTACAGTTTTTGCCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCCTTGTAC
                              ^                ^     ^^

     2425 BSAB1, 2441 AVR2, 2448 SSE83871, 2449 PSTI,

     TrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAla
2462 TGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCTGTACCCCCCTTCCTGCG
     ACCTCACCCTGGAAGGGGTAATTACGGATGTGGTGCCCGGGGACATGGGGGGAAGGACGC
                    ^                ^

     2480 ASE1, 2497 APAI,

     ProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGln
2522 CCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATACGTGGAGATAAGGCAG
     GGCTTGATGTGCAAGCGCGATACCTCCCACAGACGTCTCCTTATGCACCTCTATTCCGTC
                                    ^

     2553 PSTI,

     ValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGln
2582 GTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTTAAATGCCCGTGCCAG
     CACCCCCTGAAGGTGATGCACTGCCCATACTGATGACTGTTAGAATTTACGGGCACGGTC
                ^

     2594 DRA3,

     ValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaPro
2642 GTCCCATCGCCCGAATTTTTCACAGAATTGGACGGGGTGCGCCTACATAGGTTTGCGCCC
     CAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAAACGCGGG

     ProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyrPro
2702 CCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTCAGAGTAGGACTCCACGAATACCCG
     GGGACGTTCGGGAACGACGCCCTCCTCCATAGTAAGTCTCATCCTGAGGTGCTTATGGGC
                                                              ^

     2757 HGIE2,

     ValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMetLeu
2762 GTAGGGTCGCAATTACCTTGCGAGCCCGAACCGGACGTGGCCGTGTTGACGTCCATGCTC
     CATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGCACAACTGCAGGTACGAG
                                                    ^

     2809 AAT2,

     ThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerPro
2822 ACTGATCCCTCCCATATAACAGCAGAGGCGGCCGGGCGAAGGTTGGCGAGGGGATCACCC
     TGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCCGCTTCCAACCGCTCCCCTAGTGGG
                                    ^

     2850 EAG1 XMA3,

     ProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCys
2882 CCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGC
     GGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGTTGAACG
           ^          ^

     2889 BALI, 2903 NHEI,
```

FIG. 21-5

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
     ThrAlaAsnHisAspSerPr AspAlaGluLeuIl GluAlaAsnLeuL uTrpArgGln
2942 ACCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAGGCAG
     TGGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCCGTC
                               ^  ^

     2966 ESP1, 2969 SACI,

     GluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSer
3002 GAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGACTCC
     CTCTACCCGCCGTTGTAGTGGTCCCAACTCAGTCTTTTGTTTCACCACTAAGACCTGAGG

     PheAspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeu
3062 TTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAAATCCTG
     AAGCTAGGCGAACACCGCCTCCTCCTGCTCGCCCTCTAGAGGCATGGGCGTCTTTAGGAC
                                          ^

     3096 BGL2,

     ArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnPro
3122 CGGAAGTCTCGGAGATTCGCCCAGGCCCTGCCCGTTTGGGCGCGGCCGGACTATAACCCC
     GCCTTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAACCCGCGCCGGCCTGATATTGGGG
                          ^                    ^

     3143 ALWN1, 3164 EAG1 XMA3,

     ProLeuValGluThrTrpLysLysProAspTyrGluProProValValHisGlyCysPro
3182 CCGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACCACCTGTGGTCCATGGCTGCCCG
     GGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGACACCAGGTACCGACGGGC
                                          ^              ^

     3217 HGIE2, 3229 NCOI,

     LeuProProProLysSerProProValProProProArgLysLysArgThrValValLeu
3242 CTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCCTCGGAAGAAGCGGACGGTGGTCCTC
     GAAGGTGGAGGTTTCAGGGGAGGACACGGAGGCGGAGCCTTCTTCGCCTGCCACCAGGAG

     ThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSer
3302 ACTGAATCAACCCTATCTACTGCCTTGGCCGAGCTCGCCACCAGAAGCTTTGGCAGCTCC
     TGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCGTCGAGG
                                     ^              ^

     3332 SACI, 3346 HIND3,

     SerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGluProAlaProSerGly
3362 TCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCGCCCCTTCTGGC
     AGTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGAAGACCG

     CysProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGluPro
3422 TGCCCCCCCGACTCCGACGCTGAGTCCTATTCCTCCATGCCCCCCCTGGAGGGGGAGCCT
     ACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCCCTCGGA
                    ^

     3437 EAM11051,

     GlyAspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGlu
3482 GGGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGCGGAG
     CCCCTAGGCCTAGAATCGCTGCCCAGTACCAGTTGCCAGTCATCACTCCGGTTGCGCCTC
       ^^ ^

     3484 BAMHI, 3485 BSAB1, 3487 BSPE1,

     AspValValCysCysSerMetSerTyrS rTrpThrGlyAlaLeuValThrProCysAla
3542 GATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCACTCGTCACCCCGTGCGCC
     CTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGCACGCGG
```

FIG. 21-6

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

3589 DRA3, 3600 SAC2,

AlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHisAsn
3602 GCGGAAGAACAGAAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTCACCACAAT
CGCCTTCTTGTCTTTGACGGGTAGTTACGTGATTCGTTGAGCAACGATGCAGTGGTGTTA

3611 ALWN1, 3655 PFLM1,

LeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAsp
3662 TTGGTGTATTCCACCACCTCACGCAGTGCTTGCCAAAGGCAGAAGAAAGTCACATTTGAC
AACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGTCTTCTTTCAGTGTAAACTG

3681 DRA3,

ArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAlaAla
3722 AGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAGGTTAAAGCAGCGGCG
TCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCCTCCAATTTCGTCGCCGC

SerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSerLeuThrProProHis
3782 TCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGCAGCCTGACGCCCCCACAC
AGTTTTCACTTCCGATTGAACGATAGGCATCTCCTTCGAACGTCGGACTGCGGGGGTGTG

3816 HIND3,

SerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLysAla
3842 TCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTTGCCATGCCAGAAAGGCC
AGTCGGTTTAGGTTCAAACCAATACCCCGTTTTCTGCAGGCAACGGTACGGTCTTTCCGG

3875 AAT2, 3890 BGLI,

ValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsnValThrProIleAsp
3902 GTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACAATGTAACACCAATAGAC
CATTGGGTGTAGTTGAGGCACACCTTTCTGGAAGACCTTCTGTTACATTGTGGTTATCTG

ThrThrIleMetAlaLysAsnGluValPheCysValGlnProGluLysGlyGlyArgLys
3962 ACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTCAGCCTGAGAAGGGGGGTCGTAAG
TGATGGTAGTACCGATTCTTGCTCCAAAAGACGCAAGTCGGACTCTTCCCCCCAGCATTC

ProAlaArgLeuIleValPheProAspLeuGlyValArgValCysGluLysMetAlaLeu
4022 CCAGCTCGTCTCATCGTGTTCCCCGATCTGGGCGTGCGCGTGTGCGAAAAGATGGCTTTG
GGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACACGCTTTTCTACCGAAAC

TyrAspValValThrLysLeuProLeuAlaValMetGlySerSerTyrGlyPheGlnTyr
4082 TACGACGTGGTTACAAAGCTCCCCTTGGCCGTGATGGGAAGCTCCTACGGATTCCAATAC
ATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCCTTCGAGGATGCCTAAGGTTATG

SerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSerLysLysThrProMet
4142 TCACCAGGACAGCGGGTTGAATTCCTCGTGCAAGCGTGGAAGTCCAAGAAAACCCCAATG
AGTGGTCCTGTCGCCCAACTTAAGGAGCACGTTCGCACCTTCAGGTTCTTTTGGGGTTAC

4160 ECORI,

GlyPheSerTyrAspThrArgCysPheAspSerThrValThrGluSerAspIleArgThr
4202 GGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCGTACG
CCCAAGAGCATACTATGGGCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGC

FIG. 21-7

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
        4229 DRD1, 4236 ALWN1,

        GluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArgValAlaIleLysSer
4262    GAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGCGTGGCCATCAAGTCC
        CTCCTCCGTTAGATGGTTACAACACTGGAGCTGGGGGTTCGGGCGCACCGGTAGTTCAGG
                                                    ^       ^

        4301 BGLI, 4308 BALI,

        LeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGly
4322    CTCACCGAGAGGCTTTATGTTGGGGGCCCTCTTACCAATTCAAGGGGGGAGAACTGCGGC
        GAGTGGCTCTCCGAAATACAACCCCCGGGAGAATGGTTAAGTTCCCCCCTCTTGACGCCG
                                  ^

        4345 APAI,

        TyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCys
4382    TATCGCAGGTGCCGCGCGAGCGGCGTACTGACAACTAGCTGTGGTAACACCCTCACTTGC
        ATAGCGTCCACGGCGCGCTCGCCGCATGACTGTTGATCGACACCATTGTGGGAGTGAACG

        TyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuVal
4442    TACATCAAGGCCCGGGCAGCCTGTCGAGCCGCAGGGCTCCAGGACTGCACCATGCTCGTG
        ATGTAGTTCCGGGCCCGTCGGACAGCTCGGCGTCCCGAGGTCCTGACGTGGTACGAGCAC
                ^

        4452 SMAI XMAI,

        CysGlyAspAspLeuValValIleCysGluSerAlaGlyValGlnGluAspAlaAlaSer
4502    TGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGCGAGC
        ACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCCAGGTCCTCCTGCGCCGCTCG
              ^  ^

        4508 DRD1, 4511 TTH3I,

        LeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProProGlyAspProProGln
4562    CTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCCCCTGGGGACCCCCCACAA
        GACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGCGGGGGGGACCCCTGGGGGGTGTT

        ProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnValSerValAlaHisAsp
4622    CCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCCAACGTGTCAGTCGCCCACGAC
        GGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGTGCTG
                        ^

        4637 SACI,

        GlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArgAla
4682    GGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCTACAACCCCCCTCGCGAGAGCT
        CCGCGACCTTTCTCCCAGATGATGGAGTGGGCACTGGGATGTTGGGGGGAGCGCTCTCGA
                                                          ^

        4731 NRUI,

        AlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMetPhe
4742    GCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCATGTTT
        CGCACCCTCTGTCGTTCTGTGTGAGGTCAGTTAAGGACCGATCCGTTGTATTAGTACAAA

        AlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAla
4802    GCCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCCTTATAGCC
        CGGGGGTGTGACACCCGCTCCTACTATGACTACTGGGTAAAGAAATCGCAGGAATATCGG
          ^^

        4806 PFLM1, 4807 DRA3,

        ArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIleGlu
```

FIG. 21-8

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
4862  AGGGACCAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCATAGAA
      TCCCTGGTCGAACTTGTCCGGGAGCTAACGCTCTAGATGCCCCGGACGATGAGGTATCTT
                                          ^

      4893 BGL2,

      ProLeuAspLeuProProIleIleGlnArgLeuHisGlyLeuSerAlaPheSerLeuHis
4922  CCACTGGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTTCACTCCAC
      GGTGACCTAGATGGAGGTTAGTAAGTTTCTGAGGTACCGGAGTCGCGTAAAAGTGAGGTG
                                          ^

      4954 NCOI,

      SerTyrSerProGlyGluIleAsnArgValAlaAlaCysLeuArgLysLeuGlyValPro
4982  AGTTACTCTCCAGGTGAAATCAATAGGGTGGCCGCATGCCTCAGAAAACTTGGGGTACCG
      TCAATGAGAGGTCCACTTTAGTTATCCCACCGGCGTACGGAGTCTTTTGAACCCCATGGC
                                          ^                   ^

      5015 SPHI, 5035 KPNI,

      ProLeuArgAlaTrpArgHisArgAlaArgSerValArgAlaArgLeuLeuAlaArgGly
5042  CCCTTGCGAGCTTGGAGACACCGGGCCCGGAGCGTCCGCGCTAGGCTTCTGGCCAGAGGA
      GGGAACGCTCGAACCTCTGTGGCCCGGGCCTCGCAGGCGCGATCCGAAGACCGGTCTCCT
                                ^                   ^

      5064 APAI, 5091 BALI,

      GlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLys
5102  GGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGCAGTAAGAACAAAGCTCAAA
      CCGTCCCGACGGTATACACCGTTCATGGAGAAGTTGACCCGTCATTCTTGTTTCGAGTTT
                ^

      5113 NDEI,

      LeuThrProIleAlaAlaAlaGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyr
5162  CTCACTCCAATAGCGGCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTCACGGCTGGCTAC
      GAGTGAGGTTATCGCCGGCGACCGGTCGACCTGAACAGGCCGACCAAGTGCCGACCGATG
                  ^^      ^   ^

      5174 NOTI, 5175 EAG1 XMA3, 5182 BALI, 5186 PVU2,

      SerGlyGlyAspIleTyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
5222  AGCGGGGGAGACATTTATCACAGCGTGTCTCATGCCCGGCCCCGCTGGATCTGGTTTTGC
      TCGCCCCCTCTGTAAATAGTGTCGCACAGAGTACGGGCCGGGGCGACCTAGACCAAAACG
                     ^

      5240 DRA3,

      LeuLeuLeuLeuAlaAlaGlyValGlyIleTyrLeuLeuProAsnArgMetSerThrAsn
5282  CTACTCCTGCTTGCTGCAGGGGTAGGCATCTACCTCCTCCCCAACCGAATGAGCACGAAT
      GATGAGGACGAACGACGTCCCCATCCGTAGATGGAGGAGGGGTTGGCTTACTCGTGCTTA
                  ^

      5295 PSTI,

      ProLysProGlnArgLysThrLysArgAsnThrAsnArgArgProGlnAspValLysPhe
5342  CCTAAACCTCAAAGAAAGACCAAACGTAACACCAACCGGCGGCCGCAGGACGTCAAGTTC
      GGATTTGGAGTTTCTTTCTGGTTTGCATTGTGGTTGGCCGCCGGCGTCCTGCAGTTCAAG
                                          ^^        ^         ^

      5380 NOTI, 5381 EAG1 XMA3, 5390 AAT2, 5401 SMAI XMAI,

      ProGlyGlyGlyGlnIleValGlyGlyValTyrLeuLeuProArgArgGlyProArgLeu
5402  CCGGGTGGCGGTCAGATCGTTGGTGGAGTTTACTTGTTGCCGCGCAGGGGCCCTAGATTG
      GGCCCACCGCCAGTCTAGCAACCACCTCAAATGAACAACGGCGCGTCCCCGGGATCTAAC
                                          ^
```

FIG. 21-9

OIPE
DEC 0 2 2002
PATENT & TRADEMARK OFFICE
JC13

```
        5449 APAI,

        GlyValArgAlaThrArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnPro
5462    GGTGTGCGCGCGACGAGAAAGACTTCCGAGCGGTCGCAACCTCGAGGTAGACGTCAGCCT
        CCACACGCGCGCTGCTCTTTCTGAAGGCTCGCCAGCGTTGGAGCTCCATCTGCAGTCGGA
             ^         ^                 ^           ^
        5467 BSSH2, 5478 XMNI, 5502 XHOI, 5511 AAT2,

        IleProLysAlaArgArgProGluGlyArgThrTrpAlaGlnProGlyTyrProTrpPro
5522    ATCCCCAAGGCTCGTCGGCCCGAGGGCAGGACCTGGGCTCAGCCCGGGTACCCTTGGCCC
        TAGGGGTTCCGAGCAGCCGGGCTCCCGTCCTGGACCCGAGTCGGGCCCATGGGAACCGGG
                                  ^         ^     ^   ^
        5548 ALWN1, 5558 ESP1, 5564 SMAI XMAI, 5568 KPNI,

        LeuTyrGlyAsnGluGlyCysGlyTrpAlaGlyTrpLeuLeuSerProArgGlySerArg
5582    CTCTATGGCAATGAGGGCTGCGGGTGGGCGGGATGGCTCCTGTCTCCCCGTGGCTCTCGG
        GAGATACCGTTACTCCCGACGCCCACCCGCCCTACCGAGGACAGAGGGGCACCGAGAGCC

        ProSerTrpGlyProThrAspProArgArgArgSerArgAsnLeuGlyLysValIleAsp
5642    CCTAGCTGGGGCCCCACAGACCCCCGGCGTAGGTCGCGCAATTTGGGTAAGGTCATCGAT
        GGATCGACCCCGGGGTGTCTGGGGGCCGCATCCAGCGCGTTAAACCCATTCCAGTAGCTA
              ^                                                   ^
        5650 APAI, 5696 CLAI,

        ThrLeuThrCysGlyPheAlaAspLeuMetGlyTyrIleProLeuValOC AM
5702    ACCCTTACGTGCGGCTTCGCCGACCTCATGGGGTACATACCGCTCGTCTAATAGTCGAC
        TGGGAATGCACGCCGAAGCGGCTGGAGTACCCCATGTATGGCGAGCAGATTATCAGCTG
                    ^                                       ^
        5724 HGIE2, 5755 SALI,
```

FIG. 21-10

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

```
                    MetAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsn
  2 AGCTTACAAAACAAAATGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTCAAC
    TCGAATGTTTTGTTTTACCGACGTATACGTCGAGTCCCGATATTCCACGATCATGAGTTG
    ^                   ^                                  ^
    1 HIND3, 24 NDEI, 52 SCAI,

    ProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAsp
 62 CCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGATCGAT
    GGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTAGCTA
                                                            ^
    116 CLAI,

    ProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSerThr
122 CCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTACTCCACC
    GGATTGTAGTCCTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGCATGAGGTGG

    TyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIleCys
182 TACGGCAAGTTCCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGACATAATAATTTGT
    ATGCCGTTCAAGGAACGGCTGCCGCCCACGAGCCCCCCGCGAATACTGTATTATTAAACA

    AspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGln
242 GACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATTGGCACTGTCCTTGACCAA
    CTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTGACAGGAACTGGTT

    AlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySerVal
302 GCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTCCGTC
    CGTCTCTGACGCCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCCGAGGCAG
     ^
    303 ALWN1,

    ThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPhe
362 ACTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCCTTTT
    TGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCTCTCTAGGGAAAA

    TyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHis
422 TACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTTCTGTCAT
    ATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCCTCTGTAGAGTAGAAGACAGTA
```

FIG. 22-1

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
     SerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaVal
482  TCAAAGAAGAAGTGCGACGAACTCGCCGCAAAGCTGGTCGCATTGGGCATCAATGCCGTG
     AGTTTCTTCTTCACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCGTAGTTACGGCAC

     AlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValValVal
542  GCCTACTACCGCGGTCTTGACGTGTCCGTCATCCCGACCAGCGGCGATGTTGTCGTCGTG
     CGGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCAC
              ^          ^
     550 SAC2, 560 DRD1,

     AlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsn
602  GCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGCAAT
     CGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTA
                ^
     615 BSPH1,

     ThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThrIle
662  ACGTGTGTCACCCAGACAGTCGATTTCAGCCTTGACCCTACCTTCACCATTGAGACAATC
     TGCACACAGTGGGTCTGTCAGCTAAAGTCGGAACTGGGATGGAAGTGGTAACTCTGTTAG

     ThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLys
722  ACGCTCCCCCAAGATGCTGTCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGAAG
     TGCGAGGGGGTTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGACCGTCCCCCTTC

     ProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSerSer
782  CCAGGCATCTACAGATTTGTGGCACCGGGGGAGCGCCCCTCCGGCATGTTCGACTCGTCC
     GGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTGAGCAGG
                                          ^              ^
     816 BGLI, 833 DRD1,

     ValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThr
842  GTCCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCCGCCGAGACT
     CAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCGGGCGGCTCTGA
                                             ^
     881 SACI,

     ThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeu
902  ACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCATCTT
     TGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACGGTCCTGGTAGAA
                                          ^
     931 SMAI XMAI,

     GluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGln
962  GAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCACTTTCTATCCCAG
     CTTAAAACCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAAGATAGGGTC
                                       ^
     985 STUI,

     ThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAla
1022 ACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGGTAGCGTACCAAGCCACCGTGTGCGCT
     TGTTTCGTCTCACCCCTCTTGGAAGGAATGGACCATCGCATGGTTCGGTGGCACACGCGA
                                                   ^
     1069 DRA3,

     ArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeuLys
1082 AGGGCTCAAGCCCCTCCCCCATCGTGGGACCAGATGTGGAAGTGTTTGATTCGCCTCAAG
```

FIG. 22-2

OIPE JC13
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

```
      TCCCGAGTTCGGGGAGGGGGTAGCACCCTGGTCTACACCTTCACAAACTAAGCGGAGTTC

      ProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGluIl
1142  CCCACCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTCAGAATGAAATC
      GGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACTTTAG
            ^
      1150 NCOI,

      ThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluVal
1202  ACCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTCGGCCGACCTGGAGGTC
      TGGGACTGCGTGGGTCAGTGGTTTATGTAGTACTGTACGTACAGCCGGCTGGACCTCCAG
                                  ^   ^  ^       ^    ^
      1230 BSPH1, 1234 DRD1, 1237 AVA3, 1245 EAG1 XMA3, 1250 DRD1,


      ValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeu
1262  GTCACGAGCACCTGGGTGCTCGTTGGCGGCGTCCTGGCTGCTTTGGCCGCGTATTGCCTG
      CAGTGCTCGTGGACCCACGAGCAACCGCCGCAGGACCGACGAAACCGGCGCATAACGGAC

      SerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIle
1322  TCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGTCCGGGAAGCCGGCAATCATA
      AGTTGTCCGACGCACCAGTATCACCCGTCCCAGCAGAACAGGCCCTTCGGCCGTTAGTAT
                                                    ^
      1369 NAEI,

      ProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeu
1382  CCTGACAGGGAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTA
      GGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCACGAGAGTCGTGAAT
        ^
      1385 DRD1,

      ProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeu
1442  CCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTC
      GGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAG

      LeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGln
1502  CTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAGACCAACTGGCAA
      GACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTT
      ^    ^
      1502 PSTI, 1507 TTH3I,

      LysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeu
1562  AAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACTTCATCAGTGGGATACAATACTTG
      TTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCCTATGTTATGAAC
        ^                 ^
      1565 XHOI, 1586 NDEI,

      AlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAla
1622  GCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTACAGCT
      CGCCCGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAACTACCGAAAATGTCGA
                              ^                                 ^
      1643 BSTE2, 1677 ALWN1 PVU2,

      AlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrp
1682  GCTGTCACCAGCCCACTAACCACTAGCCAAACCCTCCTCTTCAACATATTGGGGGGGTGG
      CGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATAACCCCCCCACC
```

FIG. 22-3

OIPE JC13 DEC 0 2 2002 PATENT & TRADEMARK OFFICE

```
      ValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPh ValGlyAlaGlyLeuAla
1742  GTGGCTGCCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTGGGCGCTGGCTTAGCT
      CACCGACGGGTCGAGCGGCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAATCGA
                                                                ^
      1794 ESP1,

      GlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyr
1802  GGCGCCGCCATCGGCAGTGTTGGACTGGGGAAGGTCCTCATAGACATCCTTGCAGGGTAT
      CCGCGGCGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCCATA
      ^
      1802 KAS1 NARI,

      GlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSer
1862  GGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCCTCC
      CCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGGAGG
                     ^                    ^
      1878 SACI, 1899 BSPH1,

      ThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGly
1922  ACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGTCGGC
      TGCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGGAGCATCAGCCG
            ^
      1928 TTH3I,

      ValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrp
1982  GTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCAGTGG
      CACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCCGCTCCCCCGTCACGTCACC
                           ^                ^
      2004 NAEI, 2017 SMAI XMAI,

      MetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrVal
2042  ATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCCCACGCACTACGTG
      TACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCGTGATGCAC
                              ^                              ^
      2067 SMAI XMAI, 2093 DRA3,

      ProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGln
2102  CCGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAACCCAG
      GGCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGTCGGAGTGACATTGGGTC
                     ^                                           ^
      2115 PVU2, 2159 ALWN1,

      LeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySer
2162  CTCCTGAGGCGACTGCACCAGTGGATAAGCTCGGAGTGTACCACTCCATGCTCCGGTTCC
      GAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGTGAGGTACGAGGCCAAGG
        ^                                                         ^
      2164 MST2, 2220 ECON1,

      TrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeu
2222  TGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGGCTA
      ACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACTCGCTGAAATTCTGGACCGAT

      LysAlaLysLeuMetProGlnLeuProGlyIl ProPheValSerCysGlnArgGlyTyr
2282  AAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCCTGCCAGCGCGGGTAT
      TTTCGATTCGAGTACGGTGTCGACGGACCCTAGGGGAAACACAGGACGGTCGCGCCCATA
        ^             ^             ^
      2285 ESP1, 2300 PVU2, 2310 BAMHI,
```

FIG. 22-4

OIPE JC13 DEC 02 2002 PATENT & TRADEMARK OFFICE

```
                LysGlyValTrpArgGlyAspGlyIleMetHisThrArgCysHisCysGlyAlaGluIle
2342            AAGGGGGTCTGGCGAGGGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATC
                TTCCCCCAGACCGCTCCCCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACTCTAG

                ThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsnMet
2402            ACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCCTAGGACCTGCAGGAACATG
                TGACCTGTACAGTTTTTGCCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCCTTGTAC
                                    ^                   ^       ^^

                2425 BSAB1, 2441 AVR2, 2448 SSE83871, 2449 PSTI,

                TrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAla
2462            TGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCTGTACCCCCCTTCCTGCG
                ACCTCACCCTGGAAGGGGTAATTACGGATGTGGTGCCCGGGGACATGGGGGGAAGGACGC
                              ^                   ^

                2480 ASE1, 2497 APAI,

                ProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGln
2522            CCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATACGTGGAGATAAGGCAG
                GGCTTGATGTGCAAGCGCGATACCTCCCACAGACGTCTCCTTATGCACCTCTATTCCGTC
                                                ^

                2553 PSTI,

                ValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGln
2582            GTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTTAAATGCCCGTGCCAG
                CACCCCCTGAAGGTGATGCACTGCCCATACTGATGACTGTTAGAATTTACGGGCACGGTC
                          ^

                2594 DRA3,

                ValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaPro
2642            GTCCCATCGCCCGAATTTTTCACAGAATTGGACGGGGTGCGCCTACATAGGTTTGCGCCC
                CAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAAACGCGGG

                ProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyrPro
2702            CCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTCAGAGTAGGACTCCACGAATACCCG
                GGGACGTTCGGGAACGACGCCCTCCTCCATAGTAAGTCTCATCCTGAGGTGCTTATGGGC
                                                                        ^

                2757 HGIE2,

                ValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMetLeu
2762            GTAGGGTCGCAATTACCTTGCGAGCCCGAACCGGACGTGGCCGTGTTGACGTCCATGCTC
                CATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGCACAACTGCAGGTACGAG
                                                        ^

                2809 AAT2,

                ThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerPro
2822            ACTGATCCCTCCCATATAACAGCAGAGGCGGCCGGGCGAAGGTTGGCGAGGGGATCACCC
                TGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCCGCTTCCAACCGCTCCCCTAGTGGG
                                            ^

                2850 EAG1 XMA3,

                ProSerValAlaSerSerS rAlaSerGlnLeuSerAlaProSerL uLysAlaThrCys
2882            CCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGC
                GGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGTTGAACG
                      ^               ^

                2889 BALI, 2903 NHEI,
```

FIG. 22-5

OIPE JC13 DEC 0 2 2002 PATENT & TRADEMARK OFFICE

```
     ThrAlaAsnHisAspSerPr AspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGln
2942 ACCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAGGCAG
     TGGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCCGTC
                                ^  ^
     2966 ESP1, 2969 SACI,

     GluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSer
3002 GAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGACTCC
     CTCTACCCGCCGTTGTAGTGGTCCCAACTCAGTCTTTTGTTTCACCACTAAGACCTGAGG

     PheAspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeu
3062 TTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAAATCCTG
     AAGCTAGGCGAACACCGCCTCCTCCTGCTCGCCCTCTAGAGGCATGGGCGTCTTTAGGAC
                                          ^
     3096 BGL2,

     ArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnPro
3122 CGGAAGTCTCGGAGATTCGCCCAGGCCCTGCCCGTTTGGGCGCGGCCGGACTATAACCCC
     GCCTTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAACCCGCGCCGGCCTGATATTGGGG
                          ^                         ^
     3143 ALWN1, 3164 EAG1 XMA3,

     ProLeuValGluThrTrpLysLysProAspTyrGluProProValValHisGlyCysPro
3182 CCGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACCACCTGTGGTCCATGGCTGCCCG
     GGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGACACCAGGTACCGACGGGC
                                          ^                ^
     3217 HGIE2, 3229 NCOI,

     LeuProProProLysSerProProValProProProArgLysLysArgThrValValLeu
3242 CTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCCTCGGAAGAAGCGGACGGTGGTCCTC
     GAAGGTGGAGGTTTCAGGGGAGGACACGGAGGCGGAGCCTTCTTCGCCTGCCACCAGGAG

     ThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSer
3302 ACTGAATCAACCCTATCTACTGCCTTGGCCGAGCTCGCCACCAGAAGCTTTGGCAGCTCC
     TGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCGTCGAGG
                                     ^                ^
     3332 SACI, 3346 HIND3,

     SerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGluProAlaProSerGly
3362 TCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCGCCCCTTCTGGC
     AGTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGAAGACCG

     CysProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGluPro
3422 TGCCCCCCCGACTCCGACGCTGAGTCCTATTCCTCCATGCCCCCCCTGGAGGGGGAGCCT
     ACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCCCTCGGA
                          ^
     3437 EAM11051,

     GlyAspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGlu
3482 GGGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGCGGAG
     CCCCTAGGCCTAGAATCGCTGCCCAGTACCAGTTGCCAGTCATCACTCCGGTTGCGCCTC
       ^^ ^
     3484 BAMHI, 3485 BSAB1, 3487 BSPE1,

     AspValValCysCysS rMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAla
3542 GATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCACTCGTCACCCCGTGCGCC
     CTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGCACGCGG
```

FIG. 22-6

OIPE
DEC 0 2 2002
PATENT & TRADEMARK OFFICE

3589 DRA3, 3600 SAC2,

AlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHisAsn
3602 GCGGAAGAACAGAAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTCACCACAAT
CGCCTTCTTGTCTTTGACGGGTAGTTACGTGATTCGTTGAGCAACGATGCAGTGGTGTTA

3611 ALWN1, 3655 PFLM1,

LeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAsp
3662 TTGGTGTATTCCACCACCTCACGCAGTGCTTGCCAAAGGCAGAAGAAAGTCACATTTGAC
AACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGTCTTCTTTCAGTGTAAACTG

3681 DRA3,

ArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAlaAla
3722 AGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAGGTTAAAGCAGCGGCG
TCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCCTCCAATTTCGTCGCCGC

SerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSerLeuThrProProHis
3782 TCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGCAGCCTGACGCCCCCACAC
AGTTTTCACTTCCGATTGAACGATAGGCATCTCCTTCGAACGTCGGACTGCGGGGGTGTG

3816 HIND3,

SerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLysAla
3842 TCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTTGCCATGCCAGAAAGGCC
AGTCGGTTTAGGTTCAAACCAATACCCCGTTTTCTGCAGGCAACGGTACGGTCTTTCCGG

3875 AAT2, 3890 BGLI,

ValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsnValThrProIleAsp
3902 GTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACAATGTAACACCAATAGAC
CATTGGGTGTAGTTGAGGCACACCTTTCTGGAAGACCTTCTGTTACATTGTGGTTATCTG

ThrThrIleMetAlaLysAsnGluValPheCysValGlnProGluLysGlyGlyArgLys
3962 ACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTCAGCCTGAGAAGGGGGGTCGTAAG
TGATGGTAGTACCGATTCTTGCTCCAAAAGACGCAAGTCGGACTCTTCCCCCCAGCATTC

ProAlaArgLeuIleValPheProAspLeuGlyValArgValCysGluLysMetAlaLeu
4022 CCAGCTCGTCTCATCGTGTTCCCCGATCTGGGCGTGCGCGTGTGCGAAAAGATGGCTTTG
GGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACACGCTTTTCTACCGAAAC

TyrAspValValThrLysLeuProLeuAlaValMetGlySerSerTyrGlyPheGlnTyr
4082 TACGACGTGGTTACAAAGCTCCCCTTGGCCGTGATGGGAAGCTCCTACGGATTCCAATAC
ATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCCTTCGAGGATGCCTAAGGTTATG

SerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSerLysLysThrProMet
4142 TCACCAGGACAGCGGGTTGAATTCCTCGTGCAAGCGTGGAAGTCCAAGAAAACCCCAATG
AGTGGTCCTGTCGCCCAACTTAAGGAGCACGTTCGCACCTTCAGGTTCTTTTGGGGTTAC

4160 ECORI,

GlyPh SerTyrAspThrArgCysPheAspSerThrValThrGluSerAspIleArgThr
4202 GGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCGTACG
CCCAAGAGCATACTATGGGCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGC

FIG. 22-7

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
        4229 DRD1, 4236 ALWN1,

        GluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArgValAlaIleLysSer
4262    GAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGCGTGGCCATCAAGTCC
        CTCCTCCGTTAGATGGTTACAACACTGGAGCTGGGGGTTCGGGCGCACCGGTAGTTCAGG
                                                    ^       ^
        4301 BGLI, 4308 BALI,

        LeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGly
4322    CTCACCGAGAGGCTTTATGTTGGGGGCCCTCTTACCAATTCAAGGGGGGAGAACTGCGGC
        GAGTGGCTCTCCGAAATACAACCCCCGGGAGAATGGTTAAGTTCCCCCCTCTTGACGCCG
                                ^
        4345 APAI,

        TyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCys
4382    TATCGCAGGTGCCGCGCGAGCGGCGTACTGACAACTAGCTGTGGTAACACCCTCACTTGC
        ATAGCGTCCACGGCGCGCTCGCCGCATGACTGTTGATCGACACCATTGTGGGAGTGAACG

        TyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuVal
4442    TACATCAAGGCCCGGGCAGCCTGTCGAGCCGCAGGGCTCCAGGACTGCACCATGCTCGTG
        ATGTAGTTCCGGGCCCGTCGGACAGCTCGGCGTCCCGAGGTCCTGACGTGGTACGAGCAC
                    ^
        4452 SMAI XMAI,

        CysGlyAspAspLeuValValIleCysGluSerAlaGlyValGlnGluAspAlaAlaSer
4502    TGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGCGAGC
        ACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCCAGGTCCTCCTGCGCCGCTCG
              ^  ^
        4508 DRD1, 4511 TTH3I,

        LeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProProGlyAspProProGln
4562    CTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCCCCCTGGGGACCCCCCACAA
        GACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGCGGGGGGGACCCCTGGGGGGTGTT

        ProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnValSerValAlaHisAsp
4622    CCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCCAACGTGTCAGTCGCCCACGAC
        GGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGTGCTG
                        ^
        4637 SACI,

        GlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArgAla
4682    GGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCTACAACCCCCCTCGCGAGAGCT
        CCGCGACCTTTCTCCCAGATGATGGAGTGGGCACTGGGATGTTGGGGGGAGCGCTCTCGA
                                                        ^
        4731 NRUI,

        AlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMetPhe
4742    GCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCATGTTT
        CGCACCCTCTGTCGTTCTGTGTGAGGTCAGTTAAGGACCGATCCGTTGTATTAGTACAAA

        AlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAla
4802    GCCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCCTTATAGCC
        CGGGGGTGTGACACCCGCTCCTACTATGACTACTGGGTAAAGAAATCGCAGGAATATCGG
             ^^
        4806 PFLM1, 4807 DRA3,

        ArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIleGlu
```

FIG. 22-8

OIPE
DEC 0 2 2002
JC13
PATENT & TRADEMARK OFFICE

```
4862  AGGGACCAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCATAGAA
      TCCCTGGTCGAACTTGTCCGGGAGCTAACGCTCTAGATGCCCCGGACGATGAGGTATCTT
                                          ^

      4893 BGL2,

      ProLeuAspLeuProProIleIleGlnArgLeuHisGlyLeuSerAlaPheSerLeuHis
4922  CCACTGGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTTCACTCCAC
      GGTGACCTAGATGGAGGTTAGTAAGTTTCTGAGGTACCGGAGTCGCGTAAAAGTGAGGTG
                                          ^

      4954 NCOI,

      SerTyrSerProGlyGluIleAsnArgValAlaAlaCysLeuArgLysLeuGlyValPro
4982  AGTTACTCTCCAGGTGAAATCAATAGGGTGGCCGCATGCCTCAGAAAACTTGGGGTACCG
      TCAATGAGAGGTCCACTTTAGTTATCCCACCGGCGTACGGAGTCTTTTGAACCCCATGGC
                                          ^                   ^

      5015 SPHI, 5035 KPNI,

      ProLeuArgAlaTrpArgHisArgAlaArgSerValArgAlaArgLeuLeuAlaArgGly
5042  CCCTTGCGAGCTTGGAGACACCGGGCCCGGAGCGTCCGCGCTAGGCTTCTGGCCAGAGGA
      GGGAACGCTCGAACCTCTGTGGCCCGGGCCTCGCAGGCGCGATCCGAAGACCGGTCTCCT
                          ^                   ^

      5064 APAI, 5091 BALI,

      GlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLys
5102  GGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGCAGTAAGAACAAAGCTCAAA
      CCGTCCCGACGGTATACACCGTTCATGGAGAAGTTGACCCGTCATTCTTGTTTCGAGTTT
                ^

      5113 NDEI,

      LeuThrProIleAlaAlaAlaGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyr
5162  CTCACTCCAATAGCGGCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTCACGGCTGGCTAC
      GAGTGAGGTTATCGCCGGCGACCGGTCGACCTGAACAGGCCGACCAAGTGCCGACCGATG
                ^^      ^   ^

      5174 NOTI, 5175 EAG1 XMA3, 5182 BALI, 5186 PVU2,

      SerGlyGlyAspIleTyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
5222  AGCGGGGGAGACATTTATCACAGCGTGTCTCATGCCCGGCCCCGCTGGATCTGGTTTTGC
      TCGCCCCCTCTGTAAATAGTGTCGCACAGAGTACGGGCCGGGGCGACCTAGACCAAAACG
                      ^

      5240 DRA3,

      LeuLeuLeuLeuAlaAlaGlyValGlyIleTyrLeuLeuProAsnArgMetSerThrAsn
5282  CTACTCCTGCTTGCTGCAGGGGTAGGCATCTACCTCCTCCCCAACCGAATGAGCACGAAT
      GATGAGGACGAACGACGTCCCCATCCGTAGATGGAGGAGGGGTTGGCTTACTCGTGCTTA
                ^

      5295 PSTI,

      ProLysProGlnArgLysThrLysArgAsnThrAsnArgArgProGlnAspValLysPhe
5342  CCTAAACCTCAAAGAAAGACCAAACGTAACACCAACCGGCGGCCGCAGGACGTCAAGTTC
      GGATTTGGAGTTTCTTTCTGGTTTGCATTGTGGTTGGCCGCCGGCGTCCTGCAGTTCAAG
                                          ^^      ^       ^

      5380 NOTI, 5381 EAG1 XMA3, 5390 AAT2, 5401 SMAI XMAI,

      ProGlyGlyGlyGlnIleValGlyGlyValTyrLeuLeuProArgArgGlyProArgLeu
5402  CCGGGTGGCGGTCAGATCGTTGGTGGAGTTTACTTGTTGCCGCGCAGGGGCCCTAGATTG
      GGCCCACCGCCAGTCTAGCAACCACCTCAAATGAACAACGGCGCGTCCCCGGGATCTAAC
                                          ^
```

FIG. 22-9

OIPE JC13
DEC 02 2002
PATENT & TRADEMARK OFFICE

```
      5449 APAI,

      GlyValArgAlaThrArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnPro
5462  GGTGTGCGCGCGACGAGAAAGACTTCCGAGCGGTCGCAACCTCGAGGTAGACGTCAGCCT
      CCACACGCGCGCTGCTCTTTCTGAAGGCTCGCCAGCGTTGGAGCTCCATCTGCAGTCGGA
           ^          ^                    ^          ^

      5467 BSSH2, 5478 XMNI, 5502 XHOI, 5511 AAT2,

      IleProLysAlaArgArgProGluGlyArgThrTrpAlaGlnProGlyTyrProTrpPro
5522  ATCCCCAAGGCTCGTCGGCCCGAGGGCAGGACCTGGGCTCAGCCCGGGTACCCTTGGCCC
      TAGGGGTTCCGAGCAGCCGGGCTCCCGTCCTGGACCCGAGTCGGGCCCATGGGAACCGGG
                              ^          ^     ^    ^

      5548 ALWN1, 5558 ESP1, 5564 SMAI XMAI, 5568 KPNI,

      LeuTyrGlyAsnGluGlyCysGlyTrpAlaGlyTrpLeuLeuSerProArgGlySerArg
5582  CTCTATGGCAATGAGGGCTGCGGGTGGGCGGGATGGCTCCTGTCTCCCCGTGGCTCTCGG
      GAGATACCGTTACTCCCGACGCCCACCCGCCCTACCGAGGACAGAGGGGCACCGAGAGCC

      ProSerTrpGlyProThrAspProArgArgArgSerArgAsnLeuGlyLysValIleAsp
5642  CCTAGCTGGGGCCCCACAGACCCCCGGCGTAGGTCGCGCAATTTGGGTAAGGTCATCGAT
      GGATCGACCCCGGGGTGTCTGGGGGCCGCATCCAGCGCGTTAAACCCATTCCAGTAGCTA
            ^                                                  ^

      5650 APAI, 5696 CLAI,

      ThrLeuThrCysGlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeu
5702  ACCCTTACGTGCGGCTTCGCCGACCTCATGGGGTACATACCGCTCGTCGGCGCCCCTCTT
      TGGGAATGCACGCCGAAGCGGCTGGAGTACCCCATGTATGGCGAGCAGCCGCGGGGAGAA
                              ^                    ^     ^

      5724 HGIE2, 5750 KAS1 NARI, 5756 ECON1,

      GlyGlyAlaAlaArgAlaOC AM
5762  GGAGGCGCTGCCAGGGCCTAATAGTCGAC
      CCTCCGCGACGGTCCCGGATTATCAGCTG
                              ^

      5785 SALI,
```

FIG. 22-10